CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
Ken M. Lozano

Project Number
22548

Project Title
DNA Extraction from White Onions using Laboratory Reagents vs. Household Materials

Abstract

Objectives/Goals
The objective was to determine if there is a difference between the charactistics of DNA extracted from white onions using laboratory reagents vs. household materials.

Methods/Materials
Onion DNA was extracted from the white variety (control variable) using two types of extraction materials (experimental variables). The first involved the use of laboratory reagents (DNA NOW Cell Lysis Reagent and Precipitation Reagent) using the Biogentex Science Project Series SP 101 Kit "DNA Isolation Lab". The second involved the use of common household materials (detergent, meat tenderizer and isopropyl alcohol) following the procedure taken from the General Science Learning Center Website "How to Extract DNA from Anything Living". The general extraction method used is as follows: Collect onion cells through chopping and blending; Split open onion cells using DNA NOW Cell Lysis Reaget or detergent; Destroy enzymes using DNase Inhibitors; Separate DNA by heating between 55-65 C ort meat tenderizer; and finally Precipitate DNA by DNA NOW Precipitation Reagent or 70% Isopropyl Rubbing Alcohol. The onion DNA extracted was evaluated for general appearance, color, texture at amount obtained.

Results
The results showed that the DNA extracted from the white onions exhibited some differences in general appearance, texture and amount obtained. DNA extracted using the reagents was in bubble-like string clumps at the middle and top of test tube. It was white with smooth, gelatinous texture. The ot extracted from household materials was a thin, rough, clumped mucous-like white film between thet alcohol and onion filtrate layers which eventually became clumpy. There was more onion DNA obtained using laboratory reagents as compared to household materials.

Conclusions/Discussion
In conclusion, there was a difference between the onion DNA extracted using laboratory reagents vs. household materials in terms of general appearance, texture, and amount obtained. From this experiment, future study involving electrophoresis for DNA profiling of other onion varieties can be done.

Summary Statement
This project deals with the comparison of DNA extracted from white onions using laboratory reagents vs. common household materials.

Help Received
Dr. Reynaldo Villareal helped me select onions for this project; my dad helped me put together the wood base; and my mom/home school instructor guided me through all the steps of making a science project.