CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
J1429

Project Title
Does Beta-Carotene Prevent Cancer in Plants?

Abstract

Objectives/Goals
The objective is to find out if beta-carotene will prevent the cancer caused by the plant carcinogen agrobacterium tumefaciens in plants, which plant is it more affective in Mammoth Sunflower or Lemon Queen Sunflower. My hypothesis what that beta-carotene would prevent cancer in the plants and be more affective in mammoth than in lemon queen sunflowers.

Methods/Materials
Needed to obtain, 1 packet of mammoth sunflower seeds and lemon queen sunflower seeds, 12 flower pots, tap water, beta-carotene (vitamin A) solution (5 caplets to 1 pint of water), disinfectant, inoculating needle, Agrobacterium tumefaciens (a plant carcinogen)
Purchase sunflowers at Home Depot. Purchase beta-carotene from drug store. Divide seeds into three equal groups A, B, and C. Group C is control. Germinate group b in beta-carotene solution and A, C, in water. Plant the seeds. Wait for Lemon Queen to grow 10cm and Mammoth to turn 18cm then inject group A and B with agrobacterium tumefaciens. Water group B biweekly with beta-carotene solution water groups A and C biweekly with water. Observe for next 2 weeks.

Results
The four sunflowers that have been watered with Beta-carotene and nothing else and have been injected with agrobacterium tumefaciens seem to be health. The plants that were watered with tap water and injected with Agrobacterium tumefaciens have slowly wilted. They have turned brown and are sagging. It turned out that the Mammoth sunflowers grew taller than the Lemon Queen sunflowers. The Lemon Queens did not rot as fast as Mammoth sunflowers. They were smaller but much stronger. My hypothesis proved half correct and half incorrect. The Beta-carotene did cure the cancer in the plants but the Lemon Queen was stronger and did not rot as fast in Agrobacterium tumefaciens.

Conclusions/Discussion
My hypothesis proved partially correct. The Beta-carotene did cure the cancer in the sunflowers. The part that was incorrect was that the beta-carotene would work better in Mammoth sunflowers. It proved to work better in Lemon Queen.

Summary Statement
I wanted to see if beta-carotene would prevent the cancer caused by the plant carcinogen agrobacterium tumefaciens in mammoth and lemon queen sunflowers, I also wanted to see which sunflower it would be more affective in.

Help Received
My mother supervized me while i injected the plants and helped pot them, my teacher Mr.Keith Newell purchased the agrobacterium tumefaciens for me, my father helped pot the sunflowers and look for stores to buy the plant carcinogen from.