CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)
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Project Number
J1503

Project Title
Butterflies over Pollution

Abstract

Objectives/Goals
The objective of my project is to determine the influence of chemical and particulate pollution on the Painted Lady (Vanessa cardui) butterflies undergoing metamorphosis.

Methods/Materials
I tested five groups, each containing six larvae, with ash, tap water, 2.5% acetic acid and 2.5% sodium hypoclorite, along with a control group, to see how these substances influenced their metamorphosis from the larval to the imago stage. Specifically I measured the time spent to form a chrysalis and the time spent within it before emerging.

Results
The tap water group took a longer time than the control to form their chrysalides, but both took the same amount of time to emerge. The acetic acid group formed their chrysalides in the same amount of time as the controls, but took three days longer to emerge. The ash group took a longer time to both form and emerge from their chrysalides. The sodium hypochlorite group did not survive long enough to participate in the entire experiment as five out of six died.

Conclusions/Discussion
Chemical pollution of both bases and acids, along with particulate matter such as ash, influences the time needed for a Painted Lady (Vanessa cardui) butterfly to both form a chrysalis and to develop within it before emerging. These insects have developed adaptive mechanisms that allow them to withstand and overcome minor onslaughts during metamorphosis.

Summary Statement
Chemical and particulate pollution does have an influence on the metamorphosis of Painted Lady (Vanessa cardui) butterflies.

Help Received
Mother helped transcribe information from letterboard and type report. Mother helped in mechanical construction of display.