CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)

Catherine G. McQueen

Project Number

S0517

Project Title

The Effect of Ultraviolet Light on the Production of Cholecalciferol in Heavy Cream

Abstract

Objectives/Goals

The purpose of my project was to determine if exposing heavy cream to UV light would be a method of producing cholecalciferol, also known as vitamin D3.

Methods/Materials

My main materials were a stopwatch, heavy cream, UV light bulb, ceramic light fixture, and glass bottles. I exposed heavy cream to a UV lightbulb for varying lengths of time and tested it with a vitamin D assay at a professional laboratory, in order to see if there was vitamin D production.

Results

The heavy cream sample had the precursor to vitamin D present when tested. The vitamin D quantities in the heavy cream were measured and they increased a statistically significant amount after exposure to UV light.

Conclusions/Discussion

I found that heavy cream and many other dairy products contain the precursor to vitamin D, which means that they all had the potential to produce vitamin D. Heavy cream produced vitamin D3 when exposed to UV light, which means that it can serve as an accessible method of obtaining vitamin D3.

Summary Statement

As I exposed heavy cream to Ultraviolet light, I found that heavy cream can produce Cholecalciferol (vitamin D3).

Help Received

Katherine Phillips at the Food Analysis Laboratory Control Center in the Department of Biochemistry at Virginia Tech provided a gas chromatography for my project and answered questions regarding 7-dehydrocholesterol. John Rathmacher answered my questions about the nature of vitamin D2 and