CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)

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Project Number

31194

Project Title

Effect of Selenium-Enriched Feed on Chicken Eggs

Abstract

Objectives/Goals

My objective was to determine if feeding my chickens selenium-enriched mustard meal would significantly increase the amount of available selenium in the hen's eggs when compared to commercially available feed.

Methods/Materials

I started my research by evaluating the selenium level in eggs laid by my nine chickens that had been fed a diet of commercially available feed "scratch" for a period of 90 days. This is my control for this experiment. I began my treatment over a period of 7 days, where I gradually increased the amount of selenium-enriched mustard meal, while also reducing the amount of commercial feed in their diet. I continued until the chickens were eating a diet of 100% mustard meal.

The chicken eggs were evaluated for selenium levels under control conditions (commercial feed), during transition to mustard meal, and during the treatment period of 33 days.

Materials: Commercially purchased chicken feed "scratch"; Selenium enriched mustard meal; Nine chicken hens; Chicken coop; Scale; Access to analytical laboratory (selenium measurement); Artificial light, and Paper and pencil.

Results

The data showed increased selenium levels in both the egg whites and egg yolks with chicken eggs produced on a diet of mustard meal. The selenium levels were highest in the egg yolks. This was expected due to the higher protein levels found in the yolk. The selenium levels were up to 54% higher in the egg yolks produced with a diet of selenium-enriched mustard meal over those fed commercial feed.

Conclusions/Discussion

My research shows that the level of selenium can be significantly increased (50%) by feeding my hens a diet of selenium-enriched mustard meal. Research has shown that selenium is essential to human health. The Journal of the American Medical Association published results from a study done with 1,312 patients in 1996. The result from this cancer prevention trial was based on an intake of 200ug/day selenium or a placebo. The results reported a 50% decrease in total cancer incidence.

If food can be produced naturally with increased levels of selenium, then we can eat fewer eggs and still ingest our daily requirement of selenium. The results from my experiment suggest we would need only four eggs produced with selenium-enriched feed, compared to seven eggs produced using commercial feeds for our daily requirements.

Summary Statement

To significantly increase the selenium level in chicken eggs by changing the type of feed

Help Received

My mother helped with typing the report , Dr. Mike Thomas signed off on the project, and Dr. Gary Banuelos for testing the eggs

Preliminary