CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)
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Project Number
38186

Project Title
Vitamin D Survival in the Stomach

Abstract

Objectives/Goals
The objectives is to determine the best conditions in the stomach for the highest amount of Vitamin D ingested to be readily available to provide the intended benefits. The stomach environment factors tested are its pH as determined by when the stomach is full or empty and, with Vitamin K.

Methods/Materials
Soy milk (Vitamin D source), Vitamin K capsules, Distilled water, Distilled white vinegar, Spectrophotometer, UV Spot Machine, Centrifuge, 96 wells assay plates, pH meter

Two environments of the stomach were prepared. Full stomach (pH 4) and less than half full stomach (pH 3). The control was water (pH 7). To one batch Soy milk and Vitamin K was added and to second batch Soy milk was added. They were prepared at different intervals to indicate dissolution rates at 24 hrs, 12 hrs, 8 hrs, 4 hrs and 2 hrs before testing Vitamin D availability from spun down pellet on assay plate read using Spectrophotometer at 296 wavelength determined for Vitamin D.

Results
There was more Vitamin D detected in the less than half full stomach. Vitamin K presented fluctuated change in the dissolution rate of Vitamin D in the stomach, despite the various environments presented. The results reveal that it is best to take Vitamin D with a small meal. The Vitamin K and Vitamin D did not work in synergy in the stomach as they do with calcium absorption in the bones.

Conclusions/Discussion
Smaller portion bites do allow for higher Vitamin D availability from our meal. Vitamin K in our meal will not affect Vitamin D survival in the stomach.
These dietary habits of realizing new ways to raise our Vitamin D levels in the body to help prevent current high incidences of unexplained Vitamin D deficiencies and resulting diseases.
Further research on other stomach environmental factors as bacteria in the stomach mucosa and optimum fatty diet to contribute in increasing Vitamin D in the body.

Summary Statement
To increase the chances of Vitamin D ingested in our food reaching the intended destination to conduct the key benefits.

Help Received
Dr. Arwa Kurabi, assistant research scientist at the Department of Surgery Division of Otolaryngology at the UCSD laboratory taught me the assays to perform to be read on different Spectrophotometer machines on the samples that I prepared the procedure for. My teacher also reviewed my results and analysis.