

Centennial Honors College
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ABSTRACT

Major: Chemistry

Poster

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Examination of antioxidant capacity of various vitamins

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Vitamins are an important building block in maintaining health in the human body. In order for vitamins to benefit humans, they must be dissolved and absorbed into the body. In this experiment, the solubility of vitamins A, C, D3, E, and K2 were measured in water, dimethylsulfoxide (DMSO), hexanes and methanol. The hexanes were the stand-in for oils or fat, as well as the DMSO, though the DMSO has less oil properties than hexanes. The methanol and water were used to identify any water-soluble vitamins. The vitamins were extracted from their pills and placed into roughly 1 mL of each solution. Once solubility was determined, tetracyanoethylene (TCNE) was used to identify the antioxidant capacity of vitamins A and C, as well as vitamins D3 and E. Antioxidants are used in the body as free radical scavengers and have shown to have cancer preventing properties. Using a 0.1 molar solution of TCNE, the vitamins were extracted from the pills used and placed into roughly 25 mL of TCNE solution and observed to see if any color change occurred, which indicates antioxidant capacities.