CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)

Ryan C. Fong

Project Number

34340

Project Title

Ancient Chinese Secrets: An Investigation of Antioxidant Properties of Various Chinese Herbs

Abstract

Objectives/Goals

The objective of this project is to determine if Chinese herbs contain high concentrations of antioxidants. The purpose in the determination of antioxidant properties of Chinese herbs may be an indicator to the possibility of identifying potential anti-cancer remedies.

Methods/Materials

1. Twelve different herbs were obtained from an herbal store in Chinatown San Francisco.
2. Grind individual samples into a fine powder using a food processor.
3. Weight 10 grams of each sample into a 500ml round flat bottom flask.
4. Add 100mL of DI water into each sample.
5. Place each sample onto a hot plate. Bring to a boil and allow boiling for 30 minutes.
6. Remove the sample from the hot plate, filter into a funnel containing glass wool to separate the solids from the liquid.
7. The ABTS Antioxidant Assay Kit part number AOX-1 was purchased from Zen-Bio, Research Triangle Park, NC. The kit includes the AOX Dilution Buffer, AOX Assay Buffer, ABTS Solution, Stop Solution, AOX Trolox, and the Myoglobin solution.
8. Prepare 300mM Trolox Stock Standard and Standard Curve.
9. Prepare samples and read absorbance at 405nm on a spectrophotometer.

Results

Twelve Chinese herbs were evaluated. All but one herb had antioxidant activity as determined using a Zen Bio Antioxidant activity test kit. Yunnan Tianqi did not exhibit any activity. The highest activity was Di Sheng with 6658uM/g Trilox Equivalent antioxidant activity.

Conclusions/Discussion

The results did support my hypothesis. Initially, I was not sure if there would be any antioxidant activity because the herbs were dried and stored at room temperatures. Most of the samples contained relatively high levels of antioxidant activity. To make a comparison of these herbs to vegetable Americans eat, broccoli was tested to have an antioxidant activity of 25.1mmol/kg. Some of these herbs contained 200 times more activity than broccoli.

As a result of this experiment, I would like to continue research in the evaluation anti-cancer properties of these herb using in-vitro experiments.

Summary Statement

The antioxidant properties of Chinese herbs as a possible indicator for an anti-cancer remedy.

Help Received

Used lab equipment at Agriculture and Priority Pollutants Laboratory under the supervision of Dr. Leonard Fong. My parents helped support the project financially for the test test and the supplies for the poster board.