



2017 NOBCCChE National Science Fair Abstract

Category: **Math and Engineering**

Title: **Effect of Micronization on the Gastric Digestion of Tart Cherry Puree**

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Tart Cherries are extremely beneficial to the human body, containing many antioxidants and polyphenols. The goal of this study was to research whether micronization increases the digestion of tart cherry puree in gastric fluid. Using nine liters of frozen tart cherry puree, the rate of bolus digestion and the amount of nutrients absorbed were observed. The sample of tart cherry puree was prepared by thawing for 12 hours: 6 hours at room temperature, and 6 hours in warm water of 30°C. The sample was then divided into 36 batches of 500 mL in plastic freezer safe bags, awaiting further analysis. Since the goal particle size of the sample needed for the experiment was 300 µm, the sample was micronized three times, for ten minutes each, in the Megatron MT5000 at 15000 rpm. Next, using the Malvern Laser Particle Size Analyzer the particle size distribution was analyzed. An optical model was then applied to calculate the predicted scattering pattern. The static in vitro digestion was then modeled with simulate saliva and gastric juices that were prepared on the day of the experiment. Through these results the total phenolic content assay was analyzed, as was the ferric reducing antioxidant power assay.