Name(s)	**Project Number**
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Project Title

Tough Beans: How Various Substances Affect the Cooking Time of Legumes

Abstract

Objectives/Goals

The objective of this project is to measure how different substances cooked with beans affects bean hardness and cooking time. My goal was to determine what substances shorten the time required to cook beans.

Methods/Materials

I cooked lima beans with each of the following test substances added to the water: baking soda, salt, milk, sugar and tomatoes. Once the lima beans were cooked, I set up a wire-type cheese slicer with a cup attached to the end of its lever, and measured how many pennies placed in the cup were needed to cut through three beans cooked with each of the test substances.

Results

I determined that beans cooked with salt had the lowest penny count with an average of 13 pennies to cut the beans, and that salt softened them. I determined that beans cooked with sugar had the highest penny count with an average of 151 pennies to cut the beans, and that sugar made the beans harder.

Conclusions/Discussion

Salt had the lowest penny county because salt allows the rate of adsorption to slow, while majorly speeding cooking. Sugar had the highest penny count because it slows the swelling of granules in cotyledons while strengthening the cell walls in beans.

Summary Statement

This experiment contributes to the world of cooking by showing which substances harden or soften beans and affect the cooking time of beans.

Help Received

I performed each step of the experiment myself without assistance.