CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

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Project Number
35816

Project Title
Bread Rising

Abstract

Objectives/Goals
We wanted to determine how altering or omitting some of the usual components involved in the chemistry of bread making affected the outcome and composition of the bread.

Methods/Materials
Under the same conditions, we baked challah (braided bread) of four different chemical compositions:
1. Control - sucrose (table sugar), yeast, flour
2. No yeast - sucrose, flour
3. No sugar - flour, yeast
4. Alternate sugar - dextrose, yeast, flour

3 challot were baked in each of the above categories

Results
We measured the length, width and height of the challah both before and after baking. We found that in all three challot missing yeast there was no significant change in the size characteristics when comparing the pre- and post-baked products. The other three compositions all led to significant rise in the bread with small changes in length and width.

Conclusions/Discussion
Altering chemical composition of challah greatly affects its eventual size and consistency after baking. We discovered yeast are able to feed on both sucrose and dextrose in a similar fashion, causing a similar rise in the bread. We also learned that yeast can function in the absence of sugar most likely metabolizing the carbohydrate in the flour. In bread without any yeast, there was no great change in its size or height before or after baking.

Summary Statement
We determined the importance of 3 critical components in bread for its eventual outcome after baking.

Help Received
None