

4-28-2016

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Recommended Citation

Carpenter, Lauren, "Sensory Evaluation of Magic Cookie Bar Supplemented with Folic Acid" (2016). *Scholars Day*. Paper 24.
http://scholarlycommons.obu.edu/scholars_day/24

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Sensory Evaluation of Magic Cookie Bar Supplemented with Folic Acid

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Abstract

Liquid folic acid has been tested during this experiment and was found to be a suitable method of folic acid supplementation that can easily be added to favorite recipes a 100 mcg drop at a time. Preparing food using folic acid supplementation helps to minimize the risk for neural tube birth defects.

The purpose of the experiment was to compare the difference between one control magic cookie bar and four others supplemented with folic acid in increasing increments. The five bars were evaluated by using six sensory characteristics- flavor, texture, color, aftertaste, cell size, and thickness.

Methods

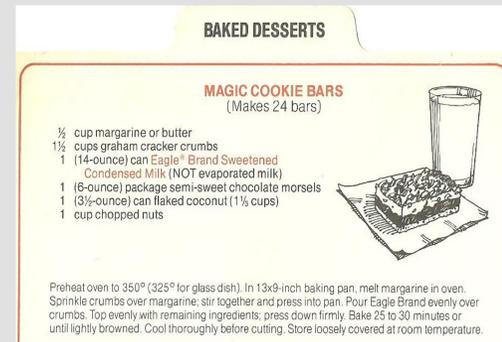
Four magic cookie bars were supplemented with folic acid in increasing increments of 100 mcg, 200 mcg, 300 mcg, and 400 mcg. The other magic cookie bar was the control of this experiment and was made without folic acid supplementation. The five bars were evaluated by using six sensory characteristics- Flavor, Texture, Color of Bars, Aftertaste, Cell Size, and Bar Thickness. The 23 untrained participants rated each sample based on these six characteristics. The survey listed randomized numbers to represent each bar. Randomized numbers were selected to ensure that each participant could not identify the different variations of folic acid supplementation. After the evaluations of the bars were complete, the scorecards were collected so that they could be further evaluated to produce results for this experiment. The data was calculated by category into averages. Each bar's ingredients were entered individually into Nutrition Data System for Research (NDSR) so that a total nutrition analysis could be determined.

Magic Cookie Bars Taste Testing Score Card				
Directions: Please taste all 4 samples and score them in the space provided using 1, 3 or 5 as your choices.	Sample			
Characteristics	943	543	839	763
Flavor 1= Unsweet; 3= Pleasing; 5= Too Sweet				
Texture 1= Soft; 3= Pleasing; 5= Very Crunchy				
Color of Bars 1= Pale; 3= Golden brown; 5= Burned				
Aftertaste 1= None; 3= Slight; 5= Distinct				
Cell Size 1= Small; 3= Moderate; 5= Large				
Bar Thickness 1= Thin; 3= Normal; 5= Very Thick				

Methods

The experiment's ingredients remained the same throughout except for the varying increments of liquid folic acid that consisted of: 100 mcg (one drop), 200 mcg (two drops), 300 mcg (three drops) and 400 mcg (four drops).

The ingredients were measured using the proper size measuring utensils for each ingredient. All ingredients were layered evenly in the baking dish. The bars were placed in the preheated oven for 30 minutes to bake.



Results

All of the participants completed the scorecards with the proper ratings for each category of the five samples of magic cookie bars (See Figure 1). They were evaluated by using the six sensory characteristics: Flavor, Texture, Color of the Bars, Aftertaste, Cell Size, and Thickness of the Bar. After data was collected, the participants' evaluations resulted in the following conclusions: flavor was rated as being the most pleasing (not too sweet or unsweet) in the bar that contained a 25% increase in folic acid supplementation, or one drop of liquid folic acid. Sensory evaluators expressed that the 50% increase in folic acid sample had the most desirable texture that was right in between being too soft and very crunchy. The results indicate that taste testers thought the 50% increase in folic acid sample had the best color because it was the closest to the perfect shade of golden brown and was neither pale nor burned. The sample increased by 25% had the best aftertaste, having left only a slight aftertaste instead of none at all or one that was very distinct. The 50% increased sample had the highest average cell size which was scored as being moderate, not small or large. The bar that had the most normal thickness was the 75% increase.



Results

Nutrition analysis reported that the original control recipe had 8 mcg of dietary folate equivalents. The control had the least amount of total folate with 8 mcg per recipe. The sample with a 25% increase in folic acid and receiving 100 mcg in supplemental liquid folic acid had a total amount of 108 mcg. The 50% increased sample had 208 mcg, 75% with 308 mcg and 100% receiving the most supplementation with 408 mcg of total folate.

The results from the study indicated that liquid folic acid was an acceptable way to add supplemental folic acid to cooked foods, especially baked goods. This study may be useful not only for dietitians counseling pregnant patients, but also to clients wanting to actively prevent neural tube birth defects by taking 0.4 to 0.8 mg of folic acid if there is any risk in becoming pregnant.

Variation	Folate Already in Recipe	Supplemental Folate	Total Folate
Control	8 mcg	0 mcg	8 mcg
25%	8 mcg	100 mcg	108 mcg
50%	8mcg	200 mcg	208 mcg
75%	8 mcg	300 mcg	308 mcg
100%	8 mcg	400 mcg	408 mcg

Table 1

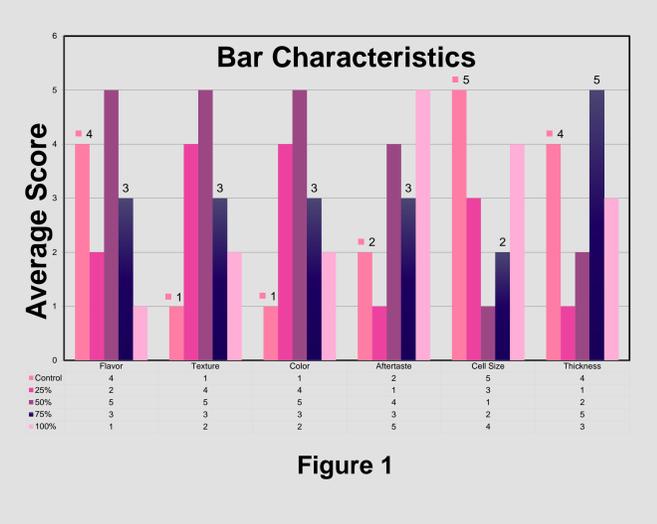


Figure 1

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