



Reducing Fat in Alfredo Sauce Recipes

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Introduction

- Our goal is to reduce the fat content of cream sauce and receive similar scores for flavor, texture, appearance, and overall likeability compared to a full fat sauce.
- The Standard American Diet (SAD) includes high intakes of processed foods and saturated fat.
- 42.4% of Americans today are overweight or obese, and this percentage continues to rise.
- The Standard American Diet has been implicated in contributing to the health challenges experienced in the United States such as obesity and chronic pain.
- Saturated fat has been shown to increase the risk of heart disease and stroke.
- The typical American diet consumes nearly double the recommended amount of saturated fat, which is 13 grams.
- Taste, appearance, and texture of food may deter Americans from consuming lower fat food options.
- Developing foods that are low in fats, but also have the same desirable attributes of high-fat foods can be a challenge because fat has functional properties that contribute to the key sensory and physiological benefits such as mouthfeel, taste, creaminess, appearance, and aroma.
- It is important that our product's flavor is as close to the full-fat alfredo recipe for our product to be favorable/acceptable.
- We wanted to find a recipe that lowers the fat content of a basic cream sauce as much as possible that is also palatable and acceptable among our taste testers in order to give American's a healthier/lower fat option to a popular dish.

Methods and Materials

Materials: Medium saucepans, Whisks, Liquid measuring cups, Solid measuring cups, Tablespoons, Teaspoons, Knife, Serving spoons.

Subjects and Setting: First trial contained 11 participants, second trial contained 12 participants, third trial contained 9 participants, & fourth trial contained 9 participants.

•Twelve untrained panelists, who were dietetic students and one instructor at a university in a Midwestern state rated the products in four recipe testings. The setting was a kitchen that included a gas stove, kitchen sinks, countertop space, and cooking equipment. There were nine female students, two male students, and a female instructor testing the recipes.

Objective Evaluation:

The spread-ability of the sauces were measured in centimeters by a ruler in recipe testing's three and four to determine the appearance and texture of the sauces. The measurements were then compared to a store-bought alfredo sauce as a control. One Tablespoon of each sauce was put onto a piece of parchment paper and allowed to spread for approximately 10 minutes before being measured.

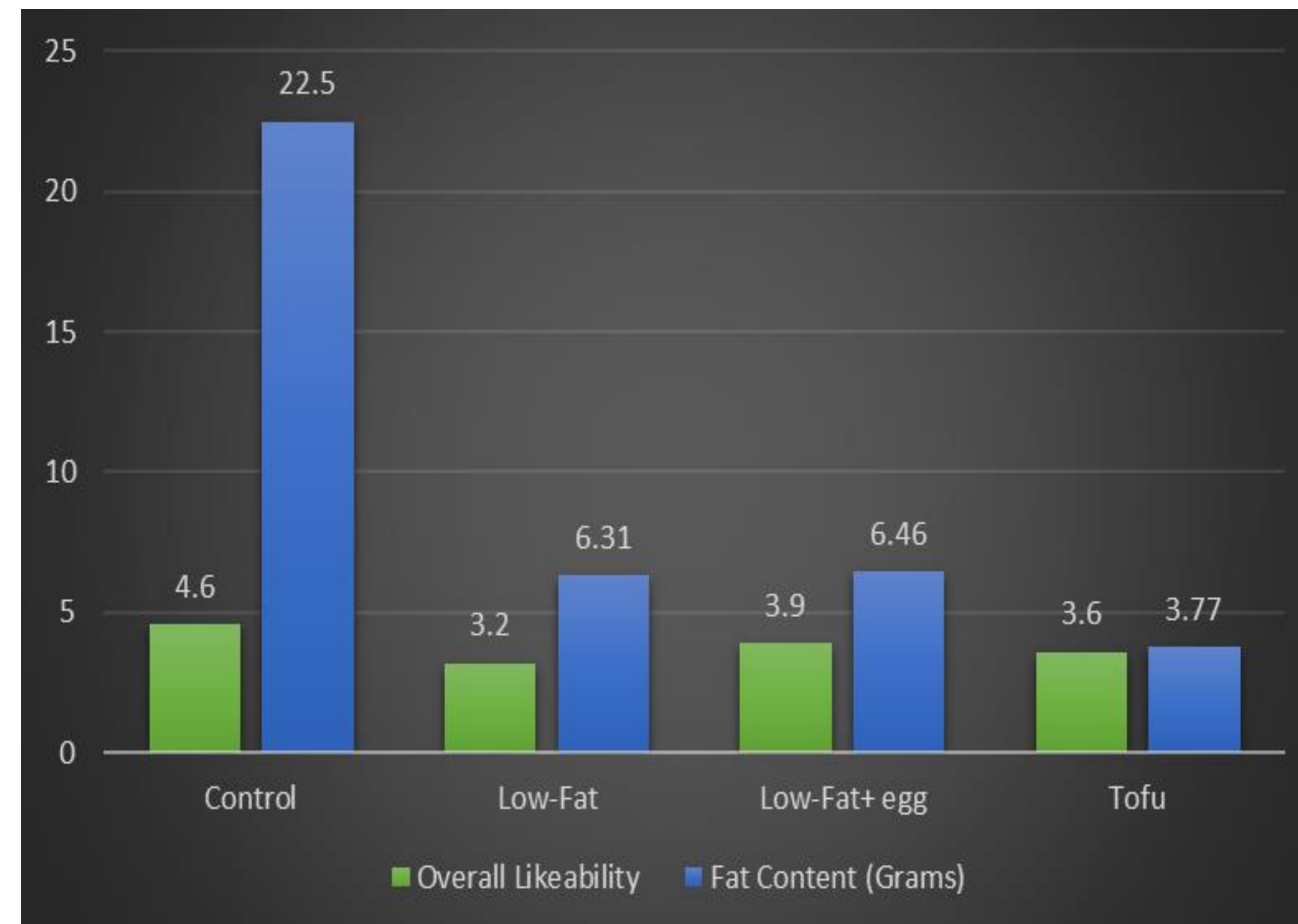
Nutrition Analysis

- Food Processor was used to analyze all recipes. The nutrients that analyzed were protein, fat, and saturated fat.

Results

- Trial 1: Control recipe was rated the best. Low fat was rated second best. There was a soymilk recipe that was discarded after due to poor ratings and the tofu sauce was too thick but good flavor.
- Trial 2: Adjustments were made to the tofu recipe in order to reduce thickness which was successful.
- Trial 3: In trial 3, the tofu sauce came out near perfect, while there was a white bean recipe and a cashew recipe both made, they were discarded due to poor ratings. There was also an addition of two egg whites for the low fat and that resulted in better appearance and overall likeability compared to the original low-fat.
- Trial 4: The only changes made in trial four were the replacement of minced garlic for garlic powder. Which resulted in minimal changes in average scores in the flavor rating.

Overall Likeability Compared with Fat Content



Control (Full Fat)

Nutrient	Amount (grams)	% DV
Fat	22.5	35%
Saturated Fat	13.7	69%
Protein	6.3	13%

Low-Fat

Nutrient	Amount (grams)	% DV
Fat	6.31	10%
Saturated Fat	2.07	10%
Protein	7.21	14.5%

Low Fat (with egg)

Nutrient	Amount (grams)	% DV
Fat	6.46	10%
Saturated Fat	2.08	10.4%
Protein	9.07	18%

Tofu

Nutrient	Amount (grams)	% DV
Fat	3.77	6%
Saturated Fat	2.26	11.3%
Protein	3.53	7%

- The above tables show a comparison of fat, saturated fat, and protein each of the four recipes contain and their correlating percentage of the U.S. Food and Drug Administration's Daily Value (DV) recommendations. The full fat control recipe contains the most fat and saturated fat, while the low fat with egg white recipe contains the most protein.

Discussion

- As the fat content of the sauces decreased, the overall likeability of the sauces decreased as well.
- The only exception being tofu, due to its water content and the way oil reacts with the water content inside the tofu (it changes the texture of the sauce).
- All spreadability's of the sauces were relatively similar, meaning texture was near consistent throughout all sauces.

Conclusions

- While fat adds flavor to white cream sauces, it is not completely necessary to include in a rich, creamy sauce.
- Those with restrictive diets like vegan and low-fat can still make flavorful, likeable cream sauces.

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References

Upon Request