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Sensory Evaluation of Dark Chocolate Sugar Cookies Prepared With Fat Substitutes



Lauren Dunklin

Nutrition and Dietetics Program

ABSTRACT

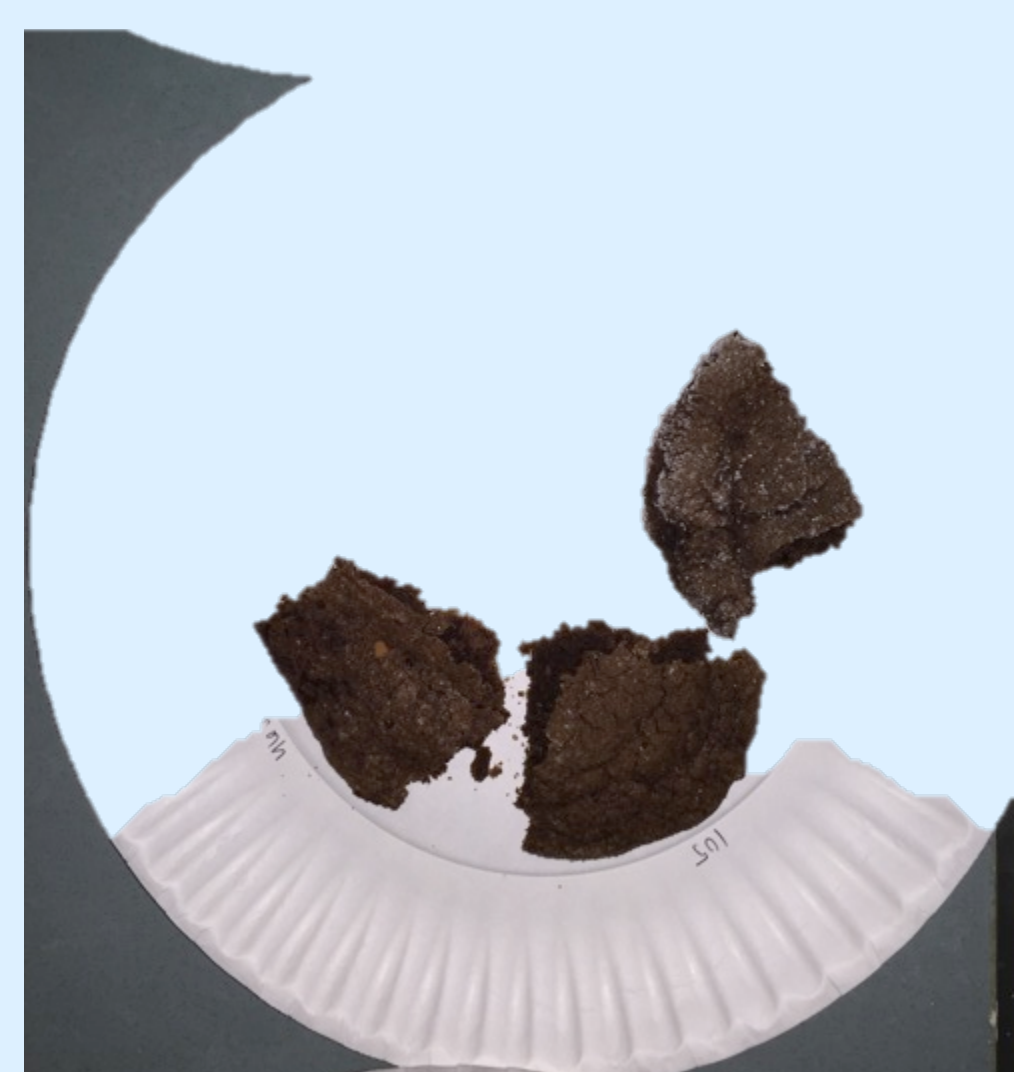
The purpose of this experiment was to create a heart friendly double chocolate sugar cookie by substituting three different types of fat and evaluating sensory characteristics of each. This experiment took place at Ouachita Baptist University. The control consisted of a batch of cookies with the original ingredients and the same baking time. There were three variations of fat to the original recipe. The three variations used were margarine Promise®, olive oil margarine Smart Balance®, and unsweetened applesauce. The four cookies were taste tested by eighteen dietetics students and volunteers. The taste testers evaluated the cookies using a scorecard based four different characteristics ranking the characteristics between one and nine, with one being disliked extremely and nine being liked extremely. The results showed that the batch of cookies substituted with margarine Promise® were the best.

PURPOSE

The purpose of this experiment was to determine the health benefits of replacing butter with fat substitutes in desserts.

SIGNIFICANCE OF STUDY

Cardiovascular disease is the leading cause of death in the world and it occurs when there is excess build up of mostly fat, cholesterol, and calcium in the coronary arteries. In women, heart disease is the number 1 cause of death, it occurs in 1 in every 3 women. One of the main risk factors for developing cardiovascular disease is high cholesterol levels. When the blood cholesterol levels rise above 200 mg/dL, the risk increases. Choosing a healthy lifestyle and sticking with it can avoid developing cardiovascular disease. It has been recommended to engage in at least 30 minutes of physical activity 5 times a week. The diet should consist of little to none saturated and trans fat and high in unsaturated fats. Saturated fats come mainly from animal foods: fatty meats,, poultry with skin, butter, cream, cheese, and whole diary foods. Trans fatty foods consist of crackers, cookies, snack foods, frozen pizza, fast food, vegetable shortening, stick margarine, and creamer. Saturated and trans fats increase the low-density lipoprotein and decrease the high-density lipoproteins. Using fat substitutes with low fat is essential to maintain a healthy diet that will reduce the chances of developing cardiovascular diseases.¹



REFERENCES

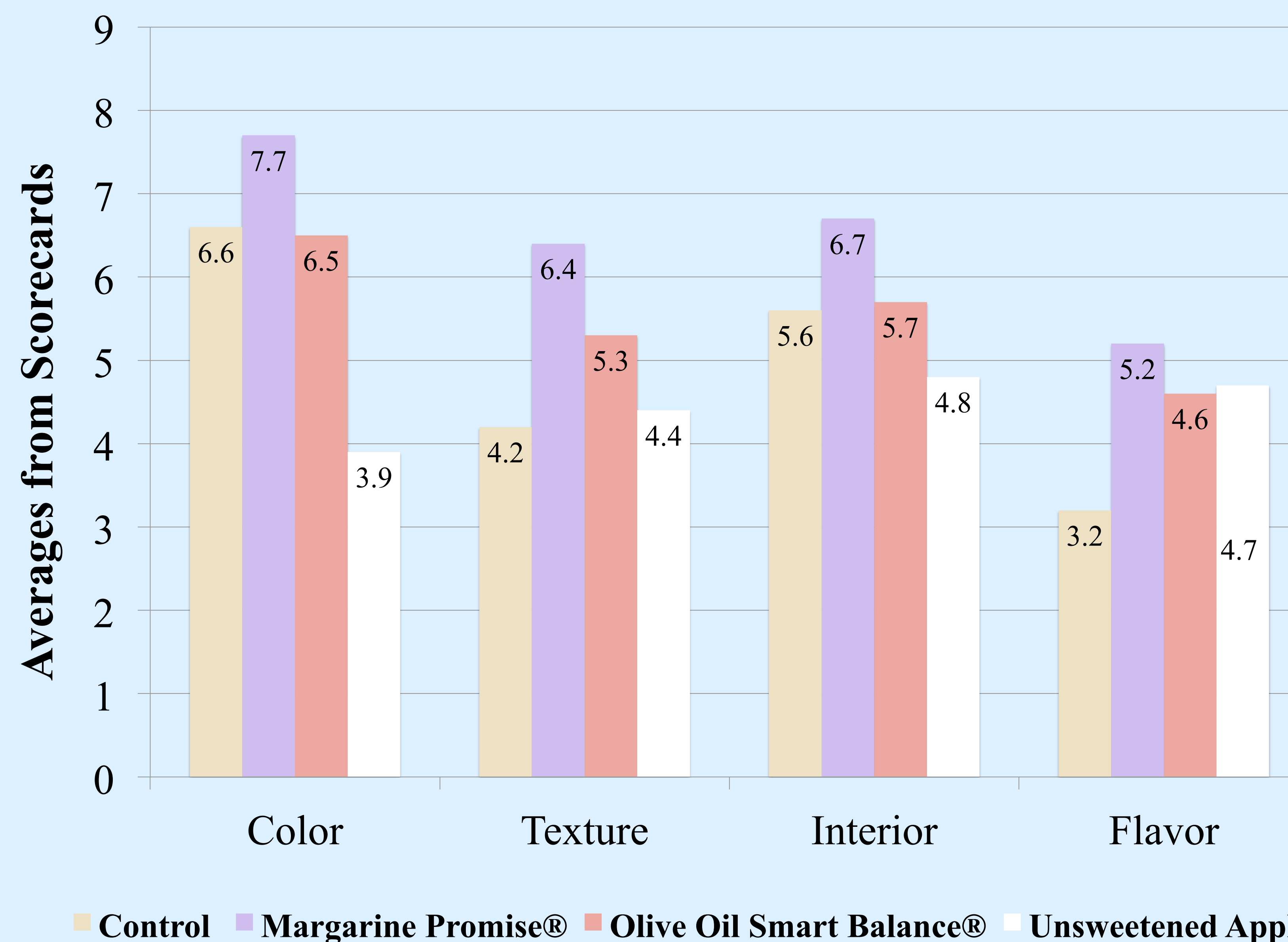
1. www.heart.org

METHODS

Before the baking began, the oven was preheated to 350 degrees Fahrenheit. One-third cup of sugar was measured and placed into a small glass bowl and set aside. One and one and a half sticks of butter, one and three-fourths cups of brown sugar, one teaspoon of vanilla, and one-half teaspoon of salt were added to a large plastic bowl and mixed properly. This batch of cookies was used as the control. For the other three batches of cookies, one and one-third cups of margarine Promise®, one and one-third cups of olive oil Smart Balance®, and one and one-half cups of applesauce was used in place of the butter. Next, one egg and one egg yolk, one and one-half cups of flour, two tablespoons of flour, three-fourths cups of cocoa powder, one-half teaspoon of baking soda and one-fourth teaspoon of baking powder were added to the mixture until well combined until the dough is stiff. The cookie sheets were sprayed with Pam® cooking spray and eighteen to twenty balls of dough were formed. The balls of dough were placed and rolled into sugar. Once on the cookie sheet, a glass cup was used to slightly push down the cookie dough. The cookie sheets were placed into the oven for 14 minutes. After each batch was baked and set out to cool, the cookies were placed on paper plates and covered with aluminum foil. Eighteen plates were marked with 4 random numbers that resembled each recipe with the different fat substitutes and the 4 sample cookies were placed on each plate. Each cookie was evaluated by the participants based on 4 characteristics: color, texture, interior appearance, and flavor. After the scorecards were collected, the data was calculated into averages to determine the best fat substitute. Every ingredient used was entered into Nutritionist Pro to analysis the total nutrition of each batch of cookies. (See Figure 1).



Figure 1: Summary of Evaluations of Cookies

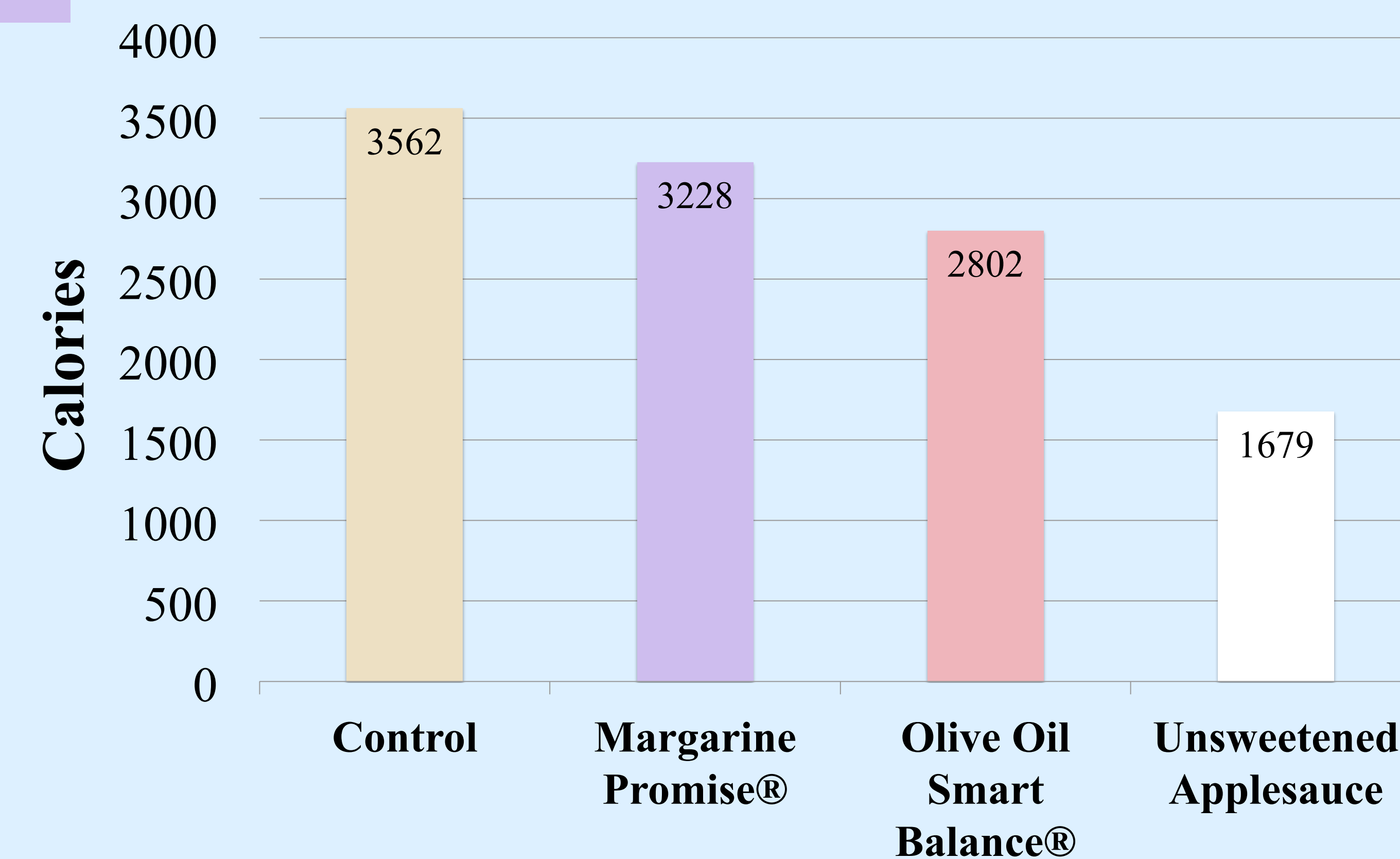


RESULTS

The participants completed a scorecard ranking the characteristics of each cookie. The cookies were scored by a number between 1 and 9, with one being disliked extremely and 9 being liked extremely. The control cookie, made with real butter, received the second highest ranking on color, the lowest ranking on texture, the third highest ranking on the interior, and the lowest ranking on flavor. The cookie with margarine Promise® was the overall most liked cookie, scoring the highest ranking in each characteristic. The cookie with Olive oil Smart Balance® was the second most liked cookie by receiving the third highest ranking on color, second on texture and interior, and third on flavor. The cookie with unsweetened applesauce received the lowest ranking on color, the third highest on texture, the lowest on interior, and the second highest on flavor. The control and cookie with unsweetened applesauce tied for the third most liked cookie. (See Figure 2).

NUTRITION ANALYSIS

Figure 2: Nutrition Analysis



Total Fat Facts

Serving Size: 1 batch (approx. 18 cookies)

Total Fat

Butter 231g

Margarine Promise® 168g

Olive Oil Smart Balance® 105g

Unsweetened Applesauce 0.15g

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.