

## **Baking with Fresh California Avocados**

Lab session developed by Julie Tuizer, MS – former Instructor Kendall College (2009-2011)

Objectives: Upon completing this course, students will know:

- How to incorporate Fresh California Avocados as a fat replacer
- The advantages of using avocados as a fat replacer
- For the most part, there isn't a major flavor difference when using avocados as a fat replacer in baked items
- The nutrient composition of a Fresh California Avocado
- The risk factors associated with high fat (especially high saturated fat) and high cholesterol diets

### I. Reducing fat and sugar in baking

45 minutes

- A) Review how fat has several purposes in baking; it provides flavor, texture, a soft mouth feel and tender crumb. Avocados can help consumers meet the dietary guidelines of the American Heart Association (AHA), which are to eat a diet that is low to moderate in fat. According to the AHA, mono and polyunsaturated fats, when consumed in moderation and eaten in place of saturated or trans fats, can help reduce blood cholesterol levels and decrease risk for heart disease.

Health-conscious bakers can substitute avocado for traditional “fat” baking ingredients such as butter, shortening or vegetable oil. Bakers looking to reduce the amount of total fat and saturated fat (bad fats) in their baked muffins, quick breads, brownies, cookies and cakes can substitute avocado for the traditional fat baking ingredient, such as butter or shortening. Simply replace these ingredients with an equal amount of avocado (e.g., replace one cup of butter, with one cup of mashed avocado) in any muffin, quick bread and even some brownie and cookie recipes. By substituting avocado, the nutritional value of baked goods is increased with the fruit’s contribution of nearly 20 vitamins, minerals and phytonutrients, along with “good fats” (poly and monounsaturated fats). Additionally, calories, fat, cholesterol and sodium in a recipe may be reduced by substituting avocado for an ingredient like butter, vegetable oil or shortening, while adding fiber and potassium. Two tablespoons of avocado have 50 calories, two tablespoons of butter total 204 calories.

The Dietary Guidelines for Americans and the American Heart Association recommend eating less nutrient-poor foods, and limiting the amount of saturated fat, trans fat, added sugars and sodium consumed. Avocados are a naturally sugar-free and sodium-free fruit and are a source of “good” fats (over 75 percent of the fat in avocado is unsaturated).

**Check out the data in our Baking Fat Replacement Nutritional Chart:**

Baking Ingredients Nutritional Comparison						
Serving Size	Fresh Avocado	Butter, Unsalted	Shortening	Margarine	Cream Cheese	Canola Oil
	1/3 of a medium avocado (50 g)	1 Tbsp.	1 Tbsp.	1 Tbsp.	2 Tbsp.	1 Tbsp.
Calories	80	100	113	100	100	120
Total Fat (g)	8	12	13	11	10	14
Sat Fat (g)	1	7	3	2	6	1
Cholesterol (mg)	0	30	0	0	30	0
Sodium (mg)	0	0	0	105	105	0

*Reference: USDA National Nutrient Database for Standard Reference, Release 28 (2015)*

\* nutrition data given for butter, unsalted; Shortening, household, soybean (hydrogenated) and palm; margarine, regular, 80% fat, composite, stick, with salt; cheese, cream; and canola oil, UPC: 858005002211.

Discuss how over 75% of the fat in avocados is unsaturated (monounsaturated and polyunsaturated fats), making them a great substitute for foods high in saturated fat.

- B) One-third of a medium avocado (50 g) has 80 calories and contributes nearly 20 vitamins and minerals, making it a heart-healthy nutrient-dense choice. Avocados can help consumers meet the healthy diet goals<sup>3</sup> of the 2015 **Dietary Guidelines** for Americans and the American Heart Association. Health-conscious **bakers can substitute avocado for many traditional baking ingredients**, such as butter or shortening. Simply replace these ingredients with an equal amount of avocado (e.g., replace one cup of butter, with one cup of mashed avocado) in any muffin, quick bread and even some brownie and cookie recipes.
- C) Discuss how substituting avocado, you get the healthy benefits of the fruit and the **nutritional value of baked goods may be increased with the fruit's contribution** of nearly 20 vitamins, minerals and phytonutrients, along with heart-healthy “good fats” (poly and monounsaturated fats). Additionally, the overall calories in a recipe can be reduced by substituting avocado for a higher-calorie ingredient like butter.
- D) Review how to use a one-to-one substitution of avocado for butter, however when substituting avocado for oil it may be necessary to add another liquid to balance the recipe

- E) Discuss how vegetable- and fruit-based desserts give us a wide variety of flavors to work with giving us new flavors to traditional recipes. They contain a high amount of water which makes the final product moister, adds fiber, vitamins and minerals
- F) Discuss how sugar adds sweetness, a soft mouth feel, crumbly texture and creates caramelization in a product. Examples are white or brown sugar, honey, molasses, corn syrup or maple syrup. For those who want to reduce their sugar intake and possibly calorie intake, sugar provides 4 calories per gram, sugar substitutes can be a good choice
  - i. Splenda®, Sweet n' Low®, Sugar alcohols (i.e. sorbitol, xylitol), and Stevia are all examples of calorie free substitutes. While these provide sweetness they do not provide any browning (i.e. caramelization) in the final product and yield smaller baked goods due to the lack of air incorporated from the creaming method
  - ii. Honey, Agave Syrup, fruit puree, date sugar and sucanat are sweeteners that provide the same taste and texture of regular sugar in a final product yet are needed in smaller amounts (giving fewer calories) and offer a new taste profile
- G) Review how eggs bind a recipe together. To replace eggs in a recipe one should experiment with a variety of vegetarian substitutes. These include soy yogurt, silken tofu, flax seed meal and water combination
- H) Discuss how to substitute butter with creamed coconut (use sparingly due to its saturated fat content), tahini (sesame seed paste) or soy margarine

## II. Working with Fresh Avocados

2.5 hours

- A) Each group will prepare one baked item for breakfast, side dish and dessert based on recipes handed out
- B) Each group will also prepare a similar recipe using avocados instead of oil in the baking for the dessert and the side dish (see end of Lesson Plan for Avocado Corn Muffin and Vegan Chocolate Cake with Avocado Icing recipes)
- C) Each group discusses what other types of baked items can be made with pureed avocados instead of oil
- D) Each group develops their own recipe using avocado as a fat replacement

## III. Tasting & Evaluation

30 minutes

- A) Food is evaluated and critiqued
- B) Recipes are evaluated and critiqued

## IV. Clean up and Closure

45 minutes

## Ingredients Needed

Fresh California Avocados  
Cake flour  
White granulated sugar  
Brown sugar  
Unsweetened cocoa powder  
Baking soda  
Baking powder  
Salt  
Espresso powder  
Vegetable oil  
Vanilla extract  
Apple cider vinegar  
Unsweetened almond milk

Powdered sugar  
Agave syrup  
All-purpose flour  
Cornmeal  
Ground pepper  
Scallion  
Marinated sun-dried tomatoes  
Oatmeal flour (see recipe below)  
Oatmeal  
Nonfat milk  
Lime  
Eggs

## Equipment Needed

Oven, range  
Mixing bowls  
Sieve  
Muffin pans  
Food processor  
Whips, pairing and chef knives, tongs

Zester  
Non-stick griddle  
Rubber spatula  
8" cake pan  
Sifter  
Gloves

## Avocado Lime Pancakes



### WEIGHTS/MEASURE

1/4 cup  
 1/2 cup  
 3/8 cup  
 2 teaspoons  
 1/4 teaspoon  
 1/2 teaspoon  
 1/4 teaspoon  
 1/4 cup  
 3/4 cup plus 1 Tablespoon  
 1 Tablespoon  
 2 teaspoons  
 1 whole

### Oatmeal Flour

1 cup

### INGREDIENTS

Oatmeal Flour (recipe follows)  
 Oatmeal  
 All-purpose flour  
 Granulated sugar  
 Baking powder  
 Baking soda  
 Salt  
 Fresh California Avocado, pureed  
 Nonfat milk  
 Lime zest, chopped  
 Lime juice  
 Egg

### Yield 3/4 cup + 1 Tablespoon

Oatmeal

**Yield: 12 Servings**

### method

#### Oatmeal Flour:

1. Put oatmeal in food processor and blend until it is a powder.

#### Avocado Lime Pancakes

1. In a medium bowl mix together oatmeal flour, oatmeal, all-purpose flour, sugar, baking powder, baking soda and salt.
2. In a small bowl whisk together pureed avocado, nonfat milk, lime zest, lime juice and egg.
3. Add wet ingredients to dry ingredients and whisk until just combined. Let batter sit for 10 minutes to thicken.
4. Heat a nonstick griddle and coat with a nonstick spray.
5. Use a rounded 1/8 cup of batter for each 3" pancake. Cook for 3 minutes total on low heat.

## **Serving Suggestions**

For a savory application top with a thin slice of fresh avocado, smoked salmon, a small dollop of sour cream and shaved red onion.

For a sweet application top with a thin slice of fresh avocado, sliced fresh berry, a small dollop of sour cream or whipped cream and lime zest.

### **Avocado Lime Pancake**

Calories	110
Protein	4 g
Carbohydrates	17 g
Dietary Fiber	1 g
Total Sugars	3 g
Cholesterol	30 mg
Fat – Total	3 g
Saturated Fat	0.5 g
Trans Fat	0 g
Poly	0.5 g
Mono	1.5 g
Potassium	97 mg
Vitamin A RE	98 mcg
Vitamin C	3 mg
Sodium	260 mg
Calcium	72 mg
Iron	2 mg
Vitamin D	1 mcg
Folate	35 mcg
Omega 3 Fatty Acid	0.04 g

## Avocado Cornbread Muffins



### WEIGHTS/MEASURE

1 cup  
1 cup  
1 Tablespoon  
1 1/4 teaspoons  
1/4 teaspoon  
2  
1/4 cup  
3/4 cups  
1 Tablespoon  
2 Tablespoons  
1/4 each  
As needed

### INGREDIENTS

All-purpose flour  
Yellow cornmeal  
Baking powder  
Salt  
Freshly ground pepper  
Egg whites  
Vegetable oil  
Water, room temperature  
Green onion, thinly sliced  
Marinated sundried tomatoes, chopped  
Fresh California Avocado\*, peeled, seeded and diced small  
Non-stick baking spray

**Yield: 10 Muffins**

### method

1. Pre-heat oven to 400°.
2. In a medium bowl, sift together flour, cornmeal, baking powder, salt and pepper. Mix well.
3. In a small bowl whisk together egg whites, vegetable oil and water. Gently stir in green onions, sundried tomato and avocado.
4. Make a well in the center of the dry ingredients and add the wet ingredients into the well.
5. Mix together gently until just combined.
6. Coat muffin pan with nonstick cooking spray. Pour 1/4 cup batter into each cup.
7. Bake for about 15 minutes or until lightly browned.

\*Large avocados are recommended for this recipe. A large avocado averages about 8 ounces. If using smaller or larger size avocados adjust the quantity accordingly.

**Variation**

To prepare the muffin, replace the 1/4 cup of vegetable oil with 3/8 cup pureed avocado  
Variation.

**Cornbread Muffins**

Calories	168.04
Protein	3.42 g
Carbohydrates	20.84 g
Dietary Fiber	2.23 g
Cholesterol	0 mg
Fat – Total	8.22 g
Saturated Fat	0.72 g
Vitamin A RE	84.54 mcg
Vitamin C	3.67 mg
Sodium	439.10 mg
% Calories from Fat	43%
% Calories from Carbohydrates	49%

**Variation: Replace 1/4 cup vegetable oil with 3/8 cup pureed avocado**

Calories	132.33
Protein	3.59 g
Carbohydrates	21.58 g
Dietary Fiber	2.80 g
Cholesterol	0 mg
Fat – Total	3.89 g
Saturated Fat	0.51 g
Vitamin A RE	85.74 mcg
Vitamin C	4.53 mg
Sodium	439.71 mg
% Calories from Fat	26%
% Calories from Carbohydrates	64%



## Vegan Chocolate Cake with Chocolate Avocado Icing



### WEIGHTS/MEASURE

### INGREDIENTS

Yield: 12 Servings

Vegan Chocolate Cake (recipe follows)

1 cup

Chocolate Avocado Icing (recipe follows)

As needed

Edible flowers or sliced fresh berries and mint for optional garnish

### Vegan Chocolate Cake

### Yield 1 8" cake

1 1/2 cups

Cake flour

3/4 cup

White granulated sugar

1/4 cup

Brown sugar

1/4 cup

Dark unsweetened cocoa powder

1 teaspoon

Baking soda

1/2 teaspoon

Salt

1/2 teaspoon

Espresso powder

1/3 cup

Vegetable oil

1 teaspoon

Vanilla extract

1 teaspoon

Apple cider vinegar

1 cup

Unsweetened almond milk

As needed

Non-stick baking spray

### Chocolate Avocado Icing

### Yield 2 cups

2

Fresh California Avocados\*, peeled and seeded, diced

1/2 cup

Dark unsweetened cocoa powder

1 1/2 Tablespoons

Powdered sugar

1/2 cup

Agave syrup

1/2 teaspoon

Vanilla extract

\*Large avocados are recommended for this recipe. A large avocado averages about 8 ounces. If using smaller or larger size avocados adjust the quantity accordingly.

## method

### Vegan Chocolate Cake

1. Pre-heat oven to 350°.
2. Into a medium bowl, sift together the flour, white sugar, brown sugar, cocoa powder, baking soda, salt and espresso powder.
3. Whisk together wet ingredients and add to dry ingredients.
4. Whisk until combined.
5. Coat an 8" round cake pan with nonstick baking spray.
6. Using a rubber spatula pour the batter into the pan and bake for 35 minutes.
7. Remove from the oven and let cake cool before removing from pan.

### Chocolate Avocado Icing

1. Into a medium bowl sift together cocoa powder and powdered sugar.
2. Mash or puree avocados then press through a sieve to remove green flecks. Add to the bowl.
3. Add agave syrup and vanilla extract and whisk until smooth. Refrigerate.

### Assembly

1. Remove cooled cake from pan.
2. Ice with Chocolate Avocado Icing.
3. Cut into 12 wedges.
4. Optional: garnish with edible fresh flowers and or sliced fresh berries.

### Variation

To prepare the cake, replace the 1/3 cup of vegetable oil with 1/3 cup pureed avocado.

### Vegan Chocolate Cake

Calories	297.62
Protein	3.33 g
Carbohydrates	44.49 g
Dietary Fiber	3.95 g
Cholesterol	0 mg
Fat – Total	12.66 g
Saturated Fat	1.59 g
Vitamin A RE	15.09 mcg
Vitamin C	3.78 mg
Sodium	219.57 mg
% Calories from Fat	37%
% Calories from Carbohydrates	58%

**Variation: Replacing 1/3 cup vegetable oil with 1/3 cup pureed avocado**

Calories	253.29
Protein	3.46 g
Carbohydrates	45.03 g
Dietary Fiber	4.38 g
Cholesterol	0 mg
Fat – Total	7.42 g
Saturated Fat	1.29 g
Vitamin A RE	15.97 mcg
Vitamin C	4.42 mg
Sodium	220.01 mg
% Calories from Fat	25%
% Calories from Carbohydrates	69%