

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 goals³ 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)	Chocolate Avocado Icing (recipe follows)	
1 cup	Edible flowers or sliced fresh berries and mint for optional garnish	
As needed		
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%