

Baking with Fresh California Avocados

Lab session developed by Julie Tuizer, MS – Instructor Kendall College

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, 2010* recommends that people consume fewer calories from foods containing added sugars, solid fat and sodium and to eat more nutrient-dense foods, including fruits and vegetables, to help get needed nutrients while balancing calorie intake. Avocados are a nutrient-dense fruit that are naturally sugar-free and sodium-free and are a

source of “good” fats (75 percent of the fat in avocado is unsaturated). Dietary fiber and potassium are identified by the *Dietary Guidelines for Americans, 2010* as nutrients of public health concern.

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

Baking “Fat Replacement” Nutritional Comparison Chart				
	Fresh Avocado [B]	Butter, Salted [C]	Vegetable Oil [D]	Shortening [E]
Portion (Single Serving Size)	2 Tbsp./30g or 2-3 thin slices	1 Tbsp./14.2g	2 Tbsp./13.6g	2 Tbsp./12.8g
Calories	50	100	105	115
Total Fat (g)	4.5	12	14	13.0
Saturated Fat (g)	0.5	8	2.0	5.0
Trans Fat	0	0	0	0
Monounsaturated Fat (g) (good fat)	3.0	3.0	1.5	6
Polyunsaturated Fat (g) (good fat)	0.5	0	6.0	1.5
Cholesterol (mg)	0	30	0	5
Sodium (mg)	0	90	0	0
Potassium (mg)	150	5	0	0
Dietary Fiber (mg)	2	0	0	0

Reference: USDA National Nutrient Database for Standard Reference, Release 26 (2011)

- B) Discuss how avocados contain mono and polyunsaturated fats. Avocados, due to their mono and polyunsaturated fat content, are a great substitute for foods rich in saturated fat. Avocados contribute good fats to one’s diet, providing 3g of mono and 0.5g of polyunsaturated fat per 1 oz. serving (about 1/5 of a medium avocado). Avocados also contribute nearly 20 vitamins, minerals and beneficial plant compounds that can contribute to the nutrient quality of your diet. Avocados can help consumers meet the dietary guidelines of the American Heart Association, which are to eat a diet that is low to moderate in fat. [13] The fats should be primarily unsaturated. The avocado is virtually the only fruit that has monounsaturated fat
- C) Discuss how using avocados as a fat substitute we can decrease the fat and calories, while adding fiber. One fifth of a medium avocado has 50 calories and 4.5 grams of fat. Avocados contribute nearly 20 vitamins, minerals and beneficial nutrients, including 8% of the recommended Daily Value (DV) for fiber, 8% vitamin K, 6% folate, 4% vitamin E, 4% vitamin C, 4% potassium, 2% iron, with 81 micrograms of lutein and 19 micrograms of beta-carotene.
- 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
 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
 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

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: 12 Servings

Oatmeal Flour

1 cup

Yield 3/4 cup + 1 Tablespoon

Oatmeal

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	56.76
Protein	2.33 g
Carbohydrates	8.71 g
Dietary Fiber	0.98 g
Cholesterol	17.96 mg
Fat – Total	1.55 g
Saturated Fat	0.32 g
Vitamin A RE	6.94 mcg
Vitamin C	1.54 mg
Sodium	124.29 mg
% Calories from Fat	24%
% Calories from Carbohydrates	60%

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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 400o.
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%

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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%

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