



## OKRA

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### What is Okra?

Okra (scientific name; *Abelmoschus esculentus*) is an attractive plant, which sprouts an upright, edible fruit [1]. Perhaps the most well-known characteristic of okra is its sticky center, which is often identified as a negative characteristic because when okra is cooked it can become gooey. Okra is popular in the Southern United States, where it is commonly fried and served whole, or used as a thickener in gumbo. (Gumbo is a flavorful dish, which usually contains meat, beef stock, vegetables, and strong flavorings like garlic cloves and hot sauce.) Although these dishes are among the most popular ways to enjoy okra, it can be eaten in a variety of other ways, including raw, roasted, sautéed, and steamed. (See recipes below)

### Nutritional Benefits

Okra's nutritional content may come as a surprise to many people. While not as widely discussed as many other nutritious vegetables such as kale and sweet potatoes, okra has an impressive vitamin and mineral content. It also contains a large amount of fiber, and has a unique profile of protein [2].

#### Vitamins and Minerals:

Table 1 shows the nutrition facts of okra. The values are based on one cup of raw, uncooked okra, a reasonable portion for someone to eat in one meal.

Table 1. Okra Nutrition Facts (based on 1 cup raw)

	Amount	% Daily Value
<b>Calories</b>	33 calories	
<b>Total Fat</b>	0.2 g	
<b>Carbohydrate</b>	7.5 g	
<b>Fiber</b>	3.2 g	12.8%
<b>Protein</b>	1.9 g	
<b>Sugar</b>	1.5 g	
<b>Calcium</b>	82 mg	8.2%
<b>Magnesium</b>	57 mg	14.3%
<b>Potassium</b>	299 mg	8.5%
<b>Sodium</b>	7 mg	
<b>Vitamin C</b>	23 mg	38.3%
<b>Thiamin</b>	0.2 mg	13.3%
<b>Vitamin B-6</b>	0.2 mg	10.8%
<b>Folate</b>	60 micro-g	15%
<b>Vitamin A</b>	716 IU	14.3%
<b>Vitamin K</b>	31.3 mg	39.1%

\*Nutrition Facts derived from USDA Nutrition Database

The most abundant vitamin in okra is vitamin K. This nutrient is important for blood clotting, which prevents excessive bleeding. Vitamin K has also been shown to play a positive role in bone health. Low intake of vitamin K might contribute to the development of osteoporosis and subsequent fracture [3].

One cup of okra contains almost 40% of the daily value of vitamin C, which is essential for normal growth and development in the body. It plays an important role in maintaining and repairing tissues, including: skin, teeth, and bones. Additionally, vitamin C is an antioxidant, which neutralizes free radicals that can accumulate in the body and often lead to aging and some diseases [4].

Vitamin A, traditionally obtained from carrots and sweet potatoes, is available in moderate amounts in okra. This vitamin helps in the production of white blood cells, which in turn maintain proper immune functioning. Other functions of vitamin A include maintaining eye health and regular cell growth.

Eight B vitamins exist in nature: thiamin, riboflavin, niacin, pantothenic acid, vitamin B<sub>6</sub>, biotin, folate, and vitamin B<sub>12</sub>. Okra contains half of these vitamins. (See Table 1) Although their functions vary slightly, they share one common function, which is to modulate energy metabolism. Energy metabolism is simply the conversion of food components into usable energy for the body.

The most prevalent mineral in okra is magnesium, which is known to have several roles in the body, including a modulator of energy production, a necessary component of bone tissue, and an antioxidant.

Calcium and potassium are found in okra, each comprising about 8% of the daily value. Calcium is well known for its function in maintaining bone and teeth health, but is also critical to cell signaling, blood clotting, muscle contraction and nerve function. Potassium also aids in nerve and muscle communication as well as aiding in blood pressure control because it can lessen the effects of sodium.

#### **Fiber:**

Okra is a great source of both soluble and insoluble fibers. Fiber is the structural part of plant foods which cannot be digested by humans. Soluble fiber dissolves in water and turn to gel during digestion. Commonly recommended for diabetics, soluble fiber works to slow the release of glucose into the bloodstream and preventing a dangerous blood-sugar spike. Soluble fiber provides several other health benefits such as aiding in the elimination of cholesterol from the diet and digestive juices and providing the feeling of fullness to help with weight loss efforts. Insoluble fiber is even more abundant in okra. Insoluble fiber, which does not dissolve in water, is key for a healthy digestive system. This type of fiber essentially “scrubs” the inside of the intestine as it passes through the digestive tract. It breaks up large particles and aids in the completion of digestion.



### **How to Select and Store Okra?**

Knowing how to select the best okra will ensure that you are receiving the most nutritious and tasty okra pods. First of all, okra is considered to be in season from June until November, when the vegetable is most abundant. It is unlikely that your local grocery store carries fresh okra, but it can be found more easily in specialty stores and farmers’ markets. When selecting fresh okra, be sure to choose the pods that are bright green and firm. Avoid choosing pods that are very hard because they will be bitter and difficult to eat. Conversely, pods that are too soft are overripe and will not taste as good either.

If you are unable to find fresh okra, many stores carry pre-sliced, frozen okra. This option is slightly more expensive than the fresh option, but it is more convenient. With frozen okra, there is no washing or cutting required, which can reduce preparation time.

Fresh okra should be stored in the refrigerator in a plastic produce bag for no more than 2-3 days. The pods should be unwashed and completely dry so that they do not absorb any moisture. If the pods become too soft or begin to turn brown, discard them.

### **Growing Okra**

Okra is commonly grown in the South due to its robust nature. Okra holds up well to pests, scarce water, and even intense heat. Additionally, the plant produces high yields throughout its season, making it a very rewarding experience for even the least experienced gardeners.

The mature plant is quite tall, with the stem usually ranging from 6 to 10 feet by the end of its growing season. The plant is frequently added to gardens because of its attractive appeal. Around the okra pods are yellow or white hibiscus-like flowers with a diameter of approximately 2-3 inches.

For more information on how to grow okra in AZ, refer to the article on “Growing Okra” by Jeff Schalau. [5]



## Cooking Okra

Okra can be an intimidating vegetable to cook with because of its reputation of being slightly gooey; however, preparing dishes with okra can actually be quite simple. The easiest way to prepare okra is by steaming it. Okra can be steamed just like any other vegetable, by placing it in a steamer or in a pot of boiling water using a steaming basket. This process takes about 5-8 minutes.

Okra can also be baked alone or with other vegetables. See the recipe below, "Savory Roasted Okra" for a simple example.

### Savory Roasted Okra

*This low-calorie recipe features okra with a spicy mixture of seasonings. Use as a side dish or for a mid-day snack.*



Serves 4 people

Estimated cost to make: \$2

#### Ingredients:

- 3 cups sliced okra (fresh or frozen)
- 1 tsp. olive oil (or spray oil)
- ¼ tsp. salt
- ¼ tsp. Italian herbs
- ½ tsp. garlic powder
- ⅛ tsp. black pepper
- Cayenne pepper (to taste)

#### Directions:

1. Preheat oven to 425°F. Prepare a baking pan by lining with foil and coating with a light layer of oil.
2. For fresh okra: rinse the pods thoroughly under running water to remove any dirt. Slice off the stem

portion of each pod and discard. Continue by cutting each of the pods into ½ inch slices. It is important that the slices are approximately the same size so that they cook evenly.

3. In a small bowl, combine the salt, Italian herbs, garlic powder, black pepper, and cayenne pepper.
4. Place the sliced okra in a medium-sized bowl and coat evenly with olive oil.
5. Lightly sprinkle the combination of seasonings over the okra and stir to ensure consistency.
6. Distribute the okra evenly in the prepared baking pan and place in the oven.
7. Allow the okra to roast for 20-25 minutes. Stir the okra once or twice to prevent burning.

#### Per Serving:

Calories, 34kcal; Carbohydrate, 5g; Protein, 1g; Total fat, 1g; Fiber, 2.5g; Calcium, 62mg; Sodium, 151mg; Cholesterol, 0mg

Sautéing okra is a great way to add a lot of flavor. Toss the sliced vegetable in a pan with hot oil and cook for 1-2 minutes, adding seasonings to taste. Pour over a bed of rice or meat sauce as your main dish. See the recipe below, "Okra Pasta" for details.

### Okra Pasta

*This okra recipe was created for my mother who did not like okra, because it is slimy and gooey. Cooking okra with tomato sauce and serving on noodles can be a welcome addition to your meal*



Serves 5 people

Estimated cost to make: ~\$10

#### Ingredients: makes 5 servings

- 2 tbs. olive oil for sauce
- 1 small onion, diced
- 1 carrot, diced
- 3 oz. mushroom, minced
- 3 stalks celery, diced
- 1 green bell peppers, diced
- ½ pounds ground meat (beef, pork, chicken, or turkey)
- 2 tbs. flour
- 1, 14-oz can diced tomatoes
- 1 tbs. honey
- 1 bouillon cube (as desired)
- 2 bay leaves
- ½ pounds okra, sliced into 1/8 inch (fresh or frozen)
- 1 tbs. olive oil for sauté okra
- 1 tsp. salt and pepper
- 5 cups cooked pasta (any type)
- Parmesan cheeses (as desired)

## Directions:

### Meat Sauce:

1. In a large pot over medium-high heat, drizzle in the 2 tbsp. of olive oil. When it is heated, add diced onion, carrot, mushrooms, celery, and bell peppers.
2. Stir and cook, then, add ground meat. Brown the ground meat. Add salt and pepper.
3. Add the flour and stir. And then, add the diced canned tomatoes, honey, bullion, bay leaves. Place a lid on the pot and allow simmering for 30 minutes to 45 minutes, stirring occasionally. Discard the bay leaves before serving.

### Sauté Okra:

4. For fresh okra: rinse the pods thoroughly under running water to remove any dirt. Slice off the stem portion of each pod and discard. Cut each of the pods into 1/8 inch slices.
5. In a heavy skillet, heat 1 tbsp. of olive oil over medium-high heat until hot, but not smoking and sauté okra. Sprinkle with salt and pepper, stirring occasionally.
6. Cook pasta until tender but still firm to the bite. Drain well. To serve, pour meat sauce over pasta, add sautéed okra, then, sprinkle with parmesan cheese. Season with salt and pepper, if desired.

## Per Serving:

Calories, 502kcal; Carbohydrate, 64g; Protein, 19g; Total fat, 19g; Fiber, 7g; Calcium, 109mg; Sodium, 520mg; Cholesterol, 78mg

## References

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## Abstract

Okra is a popular vegetable frequently found in Southern dishes. Outside of the South, okra can be hard to find. Usually okra appears during the summer at farmers markets and specialty health stores. Okra is a rich source of many nutrients, including fiber. This article outlines the nutritional benefits of okra and provides tips for how to select, store, and cook okra as well as how to grow okra in your home garden. Two of our favorite cooking methods – roasting and sautéing okra are introduced.



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