

## Food as Medicine: Carrot (*Daucus carota*, Apiaceae)

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**Editor's Note:** This article is the first in a new *HerbalEgram* "Food as Medicine" series. Each month, we will highlight a different conventional food and briefly explore its history, traditional uses in medicine, and nutritional profile. A fun, easy recipe will be included with each article to encourage readers to experience the extensive benefits of these whole foods. With this series, we hope our readers will gain a new appreciation for the foods they see every day at the supermarket and frequently include in their diets. The basic materials for this series were compiled by dietetic interns from Texas State University (TSU) and the University of Texas – Austin through the internship program at the American Botanical Council (ABC), led by Jenny Perez, ABC Education Coordinator. We would like to thank Kathryn MacLean (TSU, 2012) for putting together the information on carrots.

### History and Traditional Use

#### *Range and Habitat*

Ubiquitous at any supermarket, the common root vegetable carrot (*Daucus carota*, subsp. *sativus*) is a biennial plant that is an excellent source of vitamin A (one cup contains approximately 600% of the recommended daily value) and fiber.<sup>1</sup> Indigenous to Europe as well as parts of Asia and northern Africa, carrots now are cultivated commonly in a wide range of environments as they can withstand frosts.<sup>2</sup> The colorful varieties of carrots as well as their hardiness make them popular with home gardeners.

#### *Phytochemicals and Constituents*

Favored for their sweet flavor and versatility, carrots not only supply an impressive array of vitamins and minerals, but also contain carotenoids such as alpha- and beta-carotene, lycopene, and the flavonoid quercetin. Though the orange carrot is the most well known in modern times, carrots appear in a number of colors including white, yellow, red, and purple.<sup>3</sup> In fact, purple was the prevailing color for carrots until about four hundred years ago, when popular theory claims that the unusual orange variety was cultivated in Holland as a sign of Dutch nationalism to honor William of Orange. The exact reason why the orange cultivar became the dominant variety is unknown, though genetic evidence suggests that orange carrots developed from yellow ones.<sup>4</sup>

The different colors of carrots reveal their various concentrations of phytochemicals.<sup>5</sup> Carotenoids give yellow, orange, and red carrots their colors, while anthocyanins produce

the deep purple variety. Orange carrots contain high quantities of beta-carotene. Yellow carrots contain low quantities of beta-carotene, but higher levels of lutein, which may protect from age-related macular degeneration and be beneficial for eyesight. Red carrots contain lycopene — a potent antioxidant with potential anti-cancer activity — in concentrations similar to that of tomatoes. Red carrots also contain moderate levels of alpha- and beta-carotene and lutein. Purple carrots contain high levels of anthocyanins, antioxidants that have anti-inflammatory and cardio-protective properties. The white variety has low levels of these phytochemicals, but contains high levels of potassium.

### *Historical Uses*

The record of use of carrots in herbalism dates back to the 10th century, with mentions in the Old English Herbarium and the *Leech Book of Bald* indicating the use of the root as an emmenagogue as well as a treatment for smallpox and cough.<sup>6</sup> Around the world, both root and seed have documented historical uses, typically to promote menstruation or as a diuretic. A different species, the wild American carrot (*D. pulsillus*), has an ethnobotanical history among many American native tribes as a remedy for colds, fevers, itching, and snake bites.<sup>7</sup>

### *Modern Research*

Current research suggests that carrots may possess anti-cancer properties,<sup>8-10</sup> as well as benefits for people with high blood pressure<sup>11</sup> and cardiovascular disease.<sup>12</sup> Beta-carotene is converted by the body into vitamin A and is a powerful antioxidant, protecting the body from free radicals and maintaining healthy skin and eyes.<sup>13</sup>

Consuming large amounts of beta-carotene, especially from carrots, can result in a harmless side effect called carotenemia, which temporarily yellows the skin.<sup>13</sup> Infants, whose commercial foods often contain carrot puree as an added ingredient, are most likely to get carotenemia. The yellowing effect subsides as the body processes the excess beta-carotene.

Carrots can be enjoyed cooked or raw, as they retain their nutrients during the cooking process.<sup>14</sup> Their sweetness adds to their versatility and supports their use in both sweet and savory dishes. A sweet-and-spicy pickle, for example, enhances the carrot's natural flavor and pleasing crunch.

## **Nutrient Profile**

### **Macronutrient Profile:** (Per 1 cup raw carrots)

52 calories  
1.26 g protein  
12 g carbohydrates  
0.23 g fat

**Secondary Metabolites:** (Per 1 cup raw carrots)

*Excellent source of:*

Vitamin A: 34,317 IU (~686% DV)

Vitamin K: 16.1 mcg (20% DV)

*Very good source of:*

Vitamin C: 11.4 mg (18% DV)

Dietary Fiber: 3.7 g (14.6% DV)

Potassium: 394 mg (11.3% DV)

*Good source of:*

Vitamin B6: 0.2 mg (9% DV)

Manganese: 0.2 mg (8.5% DV)

Molybdenum: 6.1 mcg (8.1% DV)

Thiamin: 0.1 mg (8.0% DV)

Niacin: 1.1 mg (5.6% DV)

Phosphorus: 53.7 mg (5.4% DV)

Magnesium: 18.3 mg (4.6% DV)

Folate: 17.1 mcg (4.3% DV)

DV = Daily Value, as established by the US Food and Drug Administration, based on a 2,000-calorie diet.

**Recipe: Spicy Pickled Carrots**

*Adapted from Alton Brown<sup>15</sup>*

*Ingredients:*

- 1 lb. baby carrots
- 2 cloves of garlic, peeled and crushed
- 1 cup of water
- 1/2 cup of sugar
- 1 1/2 cups apple cider vinegar
- 1/2 teaspoon yellow mustard seeds
- 1 1/2 teaspoons kosher salt

- 1 teaspoon dried chili flakes
- 2 dried red chilies

*Directions:*

1. Place carrots and garlic in a 1-quart, spring-top glass jar.
2. In a non-reactive sauce pan, bring the water, sugar, cider vinegar, mustard seeds, salt, and dried chili flakes to a boil, stirring to dissolve the sugar and salt. Boil for 4 minutes.
3. Slowly pour the pickling liquid into the jar, covering the carrots and garlic completely. Submerge the chilies in the jar and cool before sealing.
4. Refrigerate for two days (for a milder pickle) or a week (for a spicier pickle). These will get hotter the longer they are kept.

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