

Celery: From whfoods.org



What's New and Beneficial About Celery

- If you have become accustomed to thinking about celery as a crunchy, low-cal vegetable but not a key part of your health support, it is time to think again. Recent research has greatly bolstered our knowledge about celery's anti-inflammatory health benefits, including its protection against inflammation in the digestive tract itself. Some of the unique non-starch polysaccharides in celery—including apiuman—appear especially important in producing these anti-inflammatory benefits. (Unlike starchy polysaccharides that provide plants with a way to store simple sugars, these non-starch polysaccharides in celery help provide this vegetable with its unique structure and are not made from simple sugars but rather from pectins.)
- In addition to well-known antioxidants like vitamin C and flavonoids, scientists have now identified at least a dozen other types of antioxidant nutrients in celery. These antioxidants include dihydrostilbenoids like lunularin as well as furanocoumarins like bergapten and psoralen. The antioxidant support we get from celery is largely due to its phenolic nutrients that have been shown to help protect us against unwanted oxygen damage to our cells, blood vessels, and organ systems.
- If you are planning to steam vegetables as part of your meal, you can include celery without having to worry about excessive loss of its phenol-based antioxidants. In a recent study, researchers compared the impact of steaming (10 minutes) versus boiling (10 minutes) versus blanching (3 minute submersion in boiling water) on the total phenolic antioxidant nutrients in celery. Both boiling and blanching resulted in substantial loss of these antioxidants, in the range of 38-41%. With steaming, however, 83-99% of these antioxidants were retained in the celery even after 10 minutes. While we encourage the practice of steaming as a cooking method of choice for many of our WHFoods vegetables, it's great to see how nutrient-preserving steaming can be in the case of celery.
- Based on multiple recent studies involving nutrient changes in stored, refrigerated celery, we recommend a period of 5-7 days as a window of time for consuming fresh celery. While some nutrients appear to be stable in whole, refrigerated celery for longer periods of time, several studies show greater losses of phenolic antioxidants in celery after this week-long period. In addition, based on changes in flavonoid content, we also recommend that you wait to chop up your celery just before you are adding it to a salad or cooked dish (rather than chopping it up the night before and leaving it stored in the refrigerator overnight). This will help to preserve its maximum nutrient potential.

[vitamin K](#) 32.8%

[molybdenum](#) 11.2%

[folate](#) 9%

[potassium](#) 7.5%

[fiber](#) 5.6%

[manganese](#) 5%

[pantothenic acid](#) 5%

[vitamin B2](#) 4.6%

[copper](#) 4.4%

[vitamin C](#) 4.1%

[vitamin B6](#) 4.1%

[calcium](#) 4%, [phosphorus](#) 3.4%, [magnesium](#) 2.7%, [vitamin A](#) 2.5%

Health Benefits

Antioxidant and Anti-Inflammatory Support

Celery is an important food source of conventional antioxidant nutrients, including vitamin C, beta-carotene, and manganese. But its "claim to fame" in terms of antioxidant nutrients may very well be its phytonutrients. Many of these phytonutrients fall into the category of phenolic antioxidants and have been shown to provide anti-inflammatory benefits as well. Below is a representative list of the phenolic antioxidants found in celery.

- Phenolic acids
 - caffeic acid
 - caffeoylquinic acid
 - cinnamic acid
 - coumaric acid
 - ferulic acid
- Flavones

- apigenin
- luteolin
- Flavonols
 - quercetin
 - kaempferol
- Dihydrostilbenoids
 - lunularin
- Phytosterols
 - beta-sitosterol
- Furanocoumarins
 - bergapten
 - psoralen

In animal studies, celery extracts containing the above-listed phytonutrients have been shown to decrease risk of oxidative damage to body fats and risk of oxidative damage to blood vessel walls. In addition, these celery extracts have been shown to prevent inflammatory reactions in the digestive tract and blood vessels. Interestingly, there is also some animal research showing the ability of celery extracts to help protect the digestive tract and liver following consumption of acrylamides. (Acrylamides are potentially toxic substances formed in food through a reaction of sugars and amino acids, usually through the process of frying.)

While most of the research above involves animals versus humans, we have also seen studies showing the importance of celery in diets that are considered to be high in antioxidant and anti-inflammatory health benefits. For example, we've seen one recent study showing celery to provide 7% of all flavonol and flavone antioxidants in the diet of adults in China. In addition, mechanisms of anti-inflammatory support have also been shown in human studies. For example, we've seen research showing the ability of celery juice and celery extracts to lower the activity of tumor necrosis factor alpha (TNF-alpha), as well as the activity of nuclear factor kappa B (NF-kB). Decreased levels of the pro-inflammatory cytokines interleukin 1B (IL-1B) and interleukin 8 (IL-8) have also been seen in these studies. All of these four messaging molecules play a key role in the body's inflammatory responses, and keeping them in check is an important step in the prevention of unwanted inflammation.

One interesting aspect of celery's antioxidant phytonutrients involves its furanocoumarins. Prior to harvest - when celery is still growing in the ground - it responds to stress by producing furanocoumarins in greater amounts. These substances help protect it in its natural living conditions. Even after celery has been harvested, however, and you start to chop it up on your kitchen countertop, it will still increase its production of furanocoumarins, and you will get greater amounts of these phytonutrients for this reason. (However, it is incorrect to assume that the chopping of celery makes it nutritionally "better" than it was before you chopped it. That's because other phytonutrients decrease simultaneously with the increase in furanocoumarins. The net result is basically a change in the composition of the celery phytonutrients, an interesting topic about which we hope to see more research on in the future.)

Digestive Tract Support

In addition to its antioxidant and anti-inflammatory nutrients that help protect the digestive tract as a whole, celery contains pectin-based polysaccharides that can provide the stomach with special benefits. We've become accustomed to thinking about polysaccharides as starchy molecules that are used by cells as a way to store up simple sugars. But there are other types of polysaccharides in plants, including the non-starch, pectin-based polysaccharides found in celery. (Pectin is a sugar-related molecule that is largely formed from a substance called glucuronic acid.) The pectin-based polysaccharides found in celery—including apiuman—appear to have special importance in producing anti-inflammatory benefits. In animal studies, celery extracts containing apiuman have been shown to improve the integrity of the stomach lining, decrease risk of stomach ulcer (gastric ulcer), and better control the levels of stomach

secretions. We look forward to future research that may confirm these stomach support benefits in humans based on dietary intake of celery in its whole food form.

Cardiovascular Support

Given the antioxidant and anti-inflammatory properties of celery described earlier in this section, it's not surprising to see the interest of researchers in the cardiovascular benefits of celery. Oxidative stress and inflammation in the bloodstream are critical problems in the development of many cardiovascular diseases, especially atherosclerosis. Unfortunately, most of the studies we've seen in this area have involved animals. Still, we've seen promising connections between the pectin-based polysaccharides in celery and decreased risk of inflammation in the cardiovascular system. We've seen these same types of connections between celery flavonoids and decreased risk of cardiovascular inflammation.

Phthalides are a further category of phytonutrients found in celery that seems important to mention as providing potential cardiovascular benefits. Phenolic substances found in celery, phthalides are a major contributor to the unique flavor of this vegetable. (Sedanenolide and butylphthalides are examples of phthalides found in celery.) Researchers have demonstrated that celery phthalides can act as smooth muscle relaxants, most likely through their impact on the flow of calcium and potassium inside cells and related nervous system activity involved with muscle relaxation. Of course, relaxation of smooth muscles surrounding our blood vessels allows them to expand and the result is a lowering of our blood pressure. (This overall process is called vasodilation.)

Phthalides in celery may also act as diuretics, further helping to lower the pressure inside our blood vessels. Unfortunately, most of the research we've seen in this area involves celery seeds, celery oil, or celery extracts - not the whole food itself. So it's not yet clear if these muscle-relaxant properties and blood pressure-lowering properties of celery phthalides will be provided to us if we include celery in our meal plans in everyday food amounts. But we will be surprised if future research on dietary intake of celery does not show some type of cardiovascular benefit directly related to celery phthalides.

Other Health Benefits

Because chronic oxidative stress and excessive inflammation are key risk factors for the development of many cancer types, it's not surprising to see scientists interested in the potential benefits of celery intake for cancer prevention. While we've seen speculation about celery benefits for stomach cancer, colon cancer, and bladder cancer, we've been unable to find actual human research studies in any of these areas. Hopefully, future research studies will address the potential cancer-related benefits of celery much more closely.

Description

In most U.S. markets, it's the Pascal family of greenish to pale-green celery cultivars that we've become most accustomed to finding in the produce section. Pascal celery is larger than most other celery types, with firm, solid stalks and leafy ends. Yet even within this particular scientific type of celery (*Apium graveolens* var. *dulce*), there are many other options including Matador, Red Stalk, Tango, and Sonora. Celery actually comes in a variety of colors from sheer white to vibrant gold to rich red and deep green.

In this genus/species of plant (*Apium graveolens*) are also found two other important types of celery. The first is celeriac (also called root celery, turnip-root celery, or knob celery). Just like the name suggests, root celery is characterized by a large root ball, which is especially prized for its unique somewhat nut-like taste. (The scientific name for celeriac is *Apium graveolens* var. *rapaceum*.) The second type of celery is leafy celery (*Apium graveolens* var. *secalinum*), which looks very similar to parsley but tastes like celery! Root and leaf celeries are valued worldwide for their unique flavors and aromas; they are often "main plate" vegetables rather than salad or soup additions.

Regardless of which celery variety you choose to buy or grow, there are nutrient benefits to be found in all parts of the plant, including the leaves, stalks, roots, and seeds. "Celery hearts" usually refers to the innermost stalks of Pascal celery. These stalks are typically the most tender.

The bigger family of plants that houses celery is what scientists call the *Apiaceae* or *Umbelliferae* family. It is also commonly known as the parsley or carrot family. (Just compare leafy carrot tops or parsley leaves with celery leaves and you'll see why.) In addition to celery, carrots, and parsley, this plant family also includes dill, fennel, cilantro/coriander, parsnip, anise, caraway, chervil, cumin, angelica, and asafetida.

History

Over time, many different types of plants across the world have been referred to by the common name "wild celery." Most of these plants—although not all of them—belong to the same family (*Apiaceae*/*Umbelliferae*) as the Pascal celery found in U.S. markets. You'll find Australian celery, Vietnamese celery, Indian celery, Maori celery, and water celery all being referred to as "wild celery" in various cultures.

The direct ancestors of Pascal celery were cultivated in parts of Europe and the Mediterranean as early as 1000 BC, and we have evidence of celery being used as a medicinal plant in ancient Egypt. There's also evidence that ancient Greek athletes were awarded celery leaves to commemorate their winning.

Today over 1 billion pounds of celery are produced each year in the United States, with California, Michigan and Florida accounting for about 80% of all celery production. The average U.S. adult eats about 6 pounds of celery per year. A substantial amount of celery in the U.S. comes from Mexico, and the U.S. exports about 200 million pounds of celery to Canada each year.

On a worldwide basis, celery is often served as a "major plate vegetable" rather than an additive to salads or soups. In addition, root celery varieties of this food (chosen for their large root balls rather than their stalks) are often cultivated over the large stalk Pascal varieties that have become most popular in the U.S.

Nutritional Profile

Celery is a rich source of phenolic phytonutrients that have antioxidant and anti-inflammatory properties. These phytonutrients include: caffeic acid, caffeoylquinic acid, cinnamic acid, coumaric acid, ferulic acid, apigenin, luteolin, quercetin, kaempferol, lunularin, beta-sitosterol and furanocoumarins. Celery is an excellent source of vitamin K and molybdenum. It is a very good source of folate, potassium, dietary fiber, manganese, and pantothenic acid. Celery is also a good source of vitamin B2, copper, vitamin C, vitamin B6, calcium, phosphorus, magnesium, and vitamin A (in the form of carotenoids).

Celery also contains approximately 35 milligrams of sodium per stalk, so salt-sensitive individuals can enjoy celery, but should keep track of this amount when monitoring daily sodium intake.

For an in-depth nutritional profile click here: [Celery](#).

In-Depth Nutritional Profile

In addition to the nutrients highlighted in our ratings chart, an in-depth nutritional profile for [Celery](#) is also available. This profile includes information on a full array of nutrients, including carbohydrates, sugar, soluble and insoluble fiber, sodium, vitamins, minerals, fatty acids, amino acids and more.

Introduction to Food Rating System Chart

In order to better help you identify foods that feature a high concentration of nutrients for the calories they contain, we created a Food Rating System. This system allows us to highlight the foods that are especially rich in particular nutrients. The following chart shows the nutrients for which this food is either an excellent, very good, or good source (below the chart you will find a table that explains these qualifications). If a nutrient is not listed in the chart, it does not necessarily mean that the food doesn't contain it. It simply means that the nutrient is not provided in a sufficient amount or concentration to meet our rating criteria. (To view this food's in-depth nutritional profile that includes values for dozens of nutrients - not just the ones rated as excellent, very good, or good - please use the link below the chart.) To read this chart accurately, you'll need to glance up in the top left corner where you will find the name of the food and the serving size we used to calculate the food's nutrient composition. This serving size will tell you how much of the food you need to eat to obtain the amount of nutrients found in the chart. Now, returning to the chart itself, you can look next to the nutrient name in order to find the nutrient amount it offers, the percent Daily Value (DV%) that this amount represents, the nutrient density that we calculated for this food and nutrient, and the rating we established in our rating system. For most of our nutrient ratings, we adopted the government standards for food labeling that are found in the U.S. Food and Drug Administration's "Reference Values for Nutrition Labeling." [Read more background information and details of our rating system.](#)

Celery, diced, raw 1.00 cup 101.00 grams Calories: 16 GI: very low				
Nutrient	Amount	DRI/ DV (%)	Nutri ent Densi ty	World's Healthiest Foods Rating
vitamin K	29.59 mcg	32.9	36.6	excellent
molybdenum	5.05 mcg	11.2	12.5	excellent
folate	36.36 mcg	9.1	10.1	very good
potassium	262.60 mg	7.5	8.4	very good
fiber	1.40 g	5.6	6.2	very good
manganese	0.10 mg	5.0	5.6	very good
pantothenic acid	0.25 mg	5.0	5.6	very good
vitamin B2	0.06 mg	4.6	5.1	good
copper	0.04 mg	4.4	5.0	good
vitamin C	3.13 mg	4.2	4.6	good
vitamin B6	0.07 mg	4.1	4.6	good
calcium	40.40 mg	4.0	4.5	good

phosphorus	24.24 mg	3.5	3.9	good
magnesium	11.11 mg	2.8	3.1	good
vitamin A	22.67 mcg RAE	2.5	2.8	good

World's Healthiest Foods Rating	Rule
excellent	DRI/DV>=75% OR Density>=7.6 AND DRI/DV>=10%
very good	DRI/DV>=50% OR Density>=3.4 AND DRI/DV>=5%
good	DRI/DV>=25% OR Density>=1.5 AND DRI/DV>=2.5%

In-Depth Nutritional Profile for [Celery](#)

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