

# DOWNLOAD PDF INDIRECT BENEFITS OF SUGAR-BEET CULTURE. LETTER FROM AND DATA PREPARED

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*indirect benefits of sugar- beet culture letter from and data prepared by truman g. palmer h concerning the indirect agricultural benefits which are derived from the culture of sugar beets presented by mr.*

References Health Benefits Remember all those legendary Russian centenarians? Beets, frequently consumed either pickled or in borscht, the traditional Russian soup, may be one reason behind their long and healthy lives. These colorful root vegetables contain powerful nutrient compounds that help protect against heart disease, birth defects and certain cancers, especially colon cancer. Beets Promote Optimal Health The pigments that give beets their rich colors are called betalains. There are two basic types of betalains: Betacyanins are pigments are red-violet in color. Betanin is the best studied of the betacyanins. Betaxanthins are yellowish in color. In light or dark red, crimson, or purple colored beets, betacyanins are the dominant pigments. In yellow beets, betaxanthins predominate, and particularly the betaxanthin called vulgaxanthin. All betalains come from the same original molecule betalamic acid. The addition of amino acids or amino acid derivatives to betalamic acid is what determines the specific type of pigment that gets produced. The betalain pigments in beets are water-soluble, and as pigments they are somewhat unusual due to their nitrogen content. Many of the betalains function both as antioxidants and anti-inflammatory molecules. At the same time, they themselves are also very vulnerable to oxidation change in structure due to interaction with oxygen. In addition to beets, rhubarb, chard, amaranth, prickly pear cactus, and Nopal cactus are examples of foods that contain betalains. Phase 2 is the second step in our cellular detoxification process. Red cabbage, for example, gets its wonderful red color primarily from anthocyanins. Beets demonstrate their antioxidant uniqueness by getting their red color primarily from betalain antioxidant pigments and not primarily from anthocyanins. Coupled with their status as a very good source of the antioxidant manganese and a good source of the antioxidant vitamin C, the unique phytonutrients in beets provide antioxidant support in a different way than other antioxidant-rich vegetables. While research is largely in the early stage with respect to beet antioxidants and their special benefits for eye health and overall nerve tissue health, we expect to see study results showing these special benefits and recognizing beets as a standout vegetable in this area of antioxidant support.

Anti-Inflammatory Benefits of Beets Many of the unique phytonutrients present in beets have been shown to function as anti-inflammatory compounds. In particular, this anti-inflammatory activity has been demonstrated for betanin, isobetanin, and vulgaxanthin. One mechanism allowing these phytonutrients to lessen inflammation is their ability to inhibit the activity of cyclo-oxygenase enzymes including both COX-1 and COX-2. The COX enzymes are widely used by cells to produce messaging molecules that trigger inflammation. Under most circumstances, when inflammation is needed, this production of pro-inflammatory messaging molecules is a good thing. However, under other circumstances, when the body is undergoing chronic, unwanted inflammation, production of these inflammatory messengers can make things worse. Several types of heart disease—including atherosclerosis—are characterized by chronic unwanted inflammation. For this reason, beets have been studied within the context of heart disease, and there are some encouraging although very preliminary results in this area involving animal studies and a few very small scale human studies. Type 2 diabetes—another health problem associated with chronic, unwanted inflammation—is also an area of interest in this regard, with research findings at a very preliminary stage. In addition to their unusual betalain and carotenoid phytonutrients, however, beets are also an unusual source of betaine. Betaine is a key body nutrient made from the B-complex vitamin, choline. Specifically, betaine is simply choline to which three methyl groups have been attached. In and of itself, choline is a key vitamin for helping regulate inflammation in the cardiovascular system since adequate choline is important for preventing unwanted build-up of homocysteine. Elevated levels of homocysteine are associated with unwanted inflammation and risk of cardiovascular problems like atherosclerosis. But betaine may be even more important in regulation of our inflammatory status as its presence in our diet has been associated with lower levels of several inflammatory

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markers, including C reactive protein, interleukin-6, and tumor necrosis factor alpha. As a group, the anti-inflammatory molecules found in beets may eventually be shown to provide cardiovascular benefits in large-scale human studies, as well as anti-inflammatory benefits for other body systems. Phase 2 is the metabolic step that our cells use to hook activated, unwanted toxic substances up with small nutrient groups. This "hook up" process effectively neutralizes the toxins and makes them sufficiently water-soluble for excretion in the urine. One critical "hook up" process during Phase 2 involves an enzyme family called the glutathione-S-transferase family GSTs. GSTs hook toxins up with glutathione for neutralization and excretion from the body. The betalains found in beet have been shown to trigger GST activity, and to aid in the elimination of toxins that require glutathione for excretion. If you are a person who thinks about exposure to toxins and wants to give your body as much detox support as possible, beets are a food that belongs in your diet. The combination of antioxidant and anti-inflammatory molecules in beets makes this food a highly-likely candidate for risk reduction of many cancer types. Lab studies on human tumor cells have confirmed this possibility for colon, stomach, nerve, lung, breast, prostate and testicular cancers. Eventually, we expect to see large-scale human studies that show the risk-reducing effect of dietary beet intake for many of these cancer types. Beet fiber has also been a nutrient of increasing interest in health research. While many people tend to lump all food fiber into one single category called "dietary fiber," there is evidence to suggest that all dietary fiber is not the same. Beet fiber along with carrot fiber are two specific types of food fiber that may provide special health benefits, particularly with respect to health of our digestive tract including prevention of colon cancer and our cardiovascular system. Some beet fiber benefits may be due to the pectin polysaccharides that significantly contribute to the total fiber content. Description Both beets and Swiss chard are different varieties within the same plant family Amaranthaceae-Chenopodiaceae and their edible leaves share a resemblance in both taste and texture. Betalain pigments in beets are highly-water soluble, and they are also temperature sensitive. For both of these reasons, it is important to treat beets as a delicate food, even though they might seem "rock solid" and difficult to damage. Raw beet roots have a crunchy texture that turns soft and buttery when they are cooked. Beet leaves have a lively, bitter taste similar to chard. The main ingredient in the traditional eastern European soup, borscht, beets are delicious eaten raw, but are more typically cooked or pickled. The greens attached to the beet roots are delicious and can be prepared like spinach or Swiss chard. While beets are available throughout the year, their season runs from June through October when the youngest, most tender beets are easiest to find. History The wild beet, the ancestor of the beet with which we are familiar today, is thought to have originated in prehistoric times in North Africa and grew wild along Asian and European seashores. In these earlier times, people exclusively ate the beet greens and not the roots. The ancient Romans were one of the first civilizations to cultivate beets to use their roots as food. The tribes that invaded Rome were responsible for spreading beets throughout northern Europe where they were first used for animal fodder and later for human consumption, becoming more popular in the 16th century. When access to sugar cane was restricted by the British, Napoleon decreed that the beet be used as the primary source of sugar, catalyzing its popularity. Around this time, beets were also first brought to the United States, where they now flourish. How to Select and Store Choose small or medium-sized beets whose roots are firm, smooth-skinned and deep in color. Avoid beets that have spots, bruises or soft, wet areas, all of which indicate spoilage. Shriveled or flabby should also be avoided as these are signs that the roots are aged, tough and fibrous. While the quality of the greens does not reflect that of the roots, if you are going to consume this very nutritious part of the plant, look for greens that appear fresh, tender, and have a lively green color. At WHFoods, we encourage the purchase of certified organically grown foods, and beets are no exception. Repeated research studies on organic foods as a group show that your likelihood of exposure to contaminants such as pesticides and heavy metals can be greatly reduced through the purchased of certified organic foods, including beets. In many cases, you may be able to find a local organic grower who sells beets but has not applied for formal organic certification either through the U. Examples of states offering state-certified organic foods include California, New York, Oregon, Vermont, and Washington. However, if you are shopping in a

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large supermarket, your most reliable source of organically grown beets is very likely to be beets that display the USDA organic logo. Cut the majority of the greens and their stems from the beet roots, so they do not pull away moisture away from the root. Leave about two inches of the stem attached to prevent the roots from "bleeding. Place in a plastic bag and wrap the bag tightly around the beets, squeezing out as much of the air from the bag as possible, and place in refrigerator where they will keep for up to 3 weeks. Loss of some nutrients in beetsâ€™for example, its vitamin C contentâ€™is likely to be slowed down through refrigeration. Store the unwashed greens in a separate plastic bag squeezing out as much of the air as possible. Place in refrigerator where they will keep fresh for about four days. Raw beets do not freeze well since they tend to become soft upon thawing. Tips for Preparing and Cooking Tips for Preparing Beets Rinse gently under cold running water, taking care not to tear the skin, which helps keep the health-promoting pigments inside. Since beet juice can stain your skin, wearing kitchen gloves is a good idea when handling beets. If your hands become stained during the cleaning and cooking process, simply rub some lemon juice on them to remove the stain. Cut beets into quarters leaving 2 inches of tap root and 1 inch of stem on the beets. We recommend Quick Steaming beets for 15 minutes. These three guidelines are: Fill the bottom of the steamer with 2 inches of water and bring to a rapid boil. Add beets, cover, and steam for 15 minutes. Beets are cooked when you can easily insert a fork or the tip or knife into the beet. Peel beets by setting them on a cutting board and rubbing the skin off with a paper towel. Wearing kitchen gloves will help prevent your hands from becoming stained. Transfer to a bowl and serve with our Mediterranean Dressing and your favorite optional ingredients. For details see Minute Beets. Adding an acidic ingredient such as lemon juice or vinegar will brighten the color while an alkaline substance such as baking soda will often cause them to turn a deeper purple. How to Enjoy A Few Quick Serving Ideas Simply grate raw beets for a delicious and colorful addition to salads or decorative garnish for soups. Healthy Boil beet greens for 1 minute for a great tasting side dish, which is very similar to Swiss chard. Marinate steamed beets in fresh lemon juice, extra virgin olive oil, and fresh herbs. Individual Concerns Beeturia Consumption of beets can cause urine to become red or pink in color. This condition "called beeturia" is not considered harmful.

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