

# Phytochemicals: The Power of Produce

A Fact Sheet from:  
Cornell Cooperative Extension-Onondaga County

Phytochemicals may help prevent heart disease, cancer, and menopausal symptoms while providing other health benefits. 'Phyto' means plant and 'chemical' refers to the substance in the plant that provides the color and flavor. These chemicals are the plant's natural defense system against disease, sunlight and oxidation from air and pollutants.

Fortunately, phytochemicals act the same way once we ingest them as they do in the plant. We benefit from their ability to boost our immune systems and increase our resistance to certain diseases. Health benefits are best obtained through the consumption of a varied diet choosing whole plant foods available locally.

Phytochemicals are found in fruits and vegetables, grains, legumes and seeds. More obscure sources include licorice, soy and green tea. Some common foods that contain high amounts of phytochemicals include garlic, onion, broccoli, cabbage, carrots, tomatoes, vegetable oil, strawberries, lemons and hot peppers. Note that phytochemicals appear to lose disease-fighting properties when isolated from natural sources and put in a pill form.

Try to choose at least five servings of fruits and vegetables each day. Refer to the chart for a brief list of known phytochemicals, common food sources and potential health benefits.

## Chocolate Swirl Cheesecake (Makes 10 servings)

1/4 cup almonds, sliced	
6 tablespoons soy margarine, melted	3 tablespoons lemon juice
9 ounces chocolate wafer cookies, crumbs	1 cup sugar
16 ounces light cream cheese	16 ounces sour cream
10 1/2 ounces tofu (firm silken)	1 teaspoon vanilla extract
4 eggs	1/8 cup chocolate syrup

1. Preheat oven to 350 degrees.
2. In food processor bowl, process crumbs. Add almonds and margarine and process. Spread evenly across the bottom and up sides of a 10-inch spring-form pan.
3. In clean processor bowl, combine cream cheese and tofu with sugar until smooth. Add four eggs and lemon juice. Process until smooth. Pour the filling over the crust and bake for 50 minutes.
4. Remove cheesecake from oven. Reduce heat to 300 degrees. Mix sour cream, remaining sugar and vanilla. Spread over cheesecake. Dizzle chocolate syrup over top of sour cream and gently marble.
5. Bake for 20-25 minutes. Cool one hour, then refrigerate overnight.

Antioxidants: lemon juice (vitamin C), nuts (vitamin E)

Favonoids: tofu (isoflavens)

Polyphenols: Chocolate, nuts

Phytosterols: soy margarine

(Source: CNYD-Farmacopia - 11/99)

## Roasted Garlic Aioli (Serves 10)

1 head garlic  
 1 cup mayonnaise  
 1 tablespoon fresh lime juice  
 1 small garlic clove, minced

1 teaspoon paprika  
 1/4 teaspoon cayenne  
 1/4 teaspoon cumin, ground

1. Preheat oven to 400 degrees.
2. Wrap garlic in foil and roast in middle of oven until tender, about 45 minutes.
3. Squeeze garlic from papery casings and puree in blender with remaining ingredients and pepper to taste.
4. Serve with fresh raw vegetables, over boiled or baked potatoes, or as a dip for tortilla chips.

Phytochemicals provided:

Flavonoids: garlic (allylsulfides)

(Source: CNYD-Farmacopia - 11/99)

### Veggie Pasta Fagioli (Makes 6 servings)

2 – 14 oz. cans or 1/2 pound bag white beans  
 2 Tbsps olive oil  
 1 medium onion, chopped  
 1 cup carrots, sliced into rounds  
 1 cup celery, chopped  
 4-6 cloves garlic, minced  
 1 – 28 oz. can plum tomatoes canned with juice #10  
 1/2 tsp ground fennel seed

2 Tbsps fresh chopped or 2 tsps dry parsley  
 1 Tbsp fresh chopped or 1 tsp dry basil  
 1 Tbsp fresh or 1/2 tsp dry oregano  
 1 1/2 cups zucchini, sliced  
 1 1/2 – 2 cups swiss chard, coarse chop  
 salt and pepper  
 1 lb. or 2 cups dry pasta, spiral  
 1/2 cup parmesan cheese, grated

1. If using dried beans, soak dried beans overnight in water to cover, or bring them to a boil, remove from heat and let soak for 1-2 hours. After soaking, drain and cook the beans until tender in 4 quarts of water for 1 hour. Avoid overcooking. Drain and set aside the cooked beans.
2. Saute the onion in oil until the onions are transparent.
3. Add the carrots, celery and garlic and saute briskly, stirring often, for 10 minutes.
4. Add the tomatoes, cooked white beans, fennel seed and herbs. Cover and bring to a simmer.
5. Add the zucchini and simmer for 30 minutes more, stirring frequently. Test the carrots for tenderness.
6. Mix the chard, cook until the greens just wilt. Adjust salt and pepper.
7. Cook the pasta until it is al dente and drain.
8. Serve each 2 oz. portion of pasta topped with 9 oz. bean stew and 1 oz. Parmesan cheese, if desired.

Phytochemicals provided:

flavonoids: olive oil, onions and garlic (allylsulfides)

phytosterols: olive oil

antioxidants: carrots (beta carotene), fennel (beta carotene)

lutein/zeaxanthin: celery, zucchini, chard

lipoic acid: parsley, chard

lycopene: tomato

Name	Foods	Potential Benefits
Allylic sulficids (allum compounds)	Garlic, onions, shallots, leeks, chives, scallions	Stimulates anti-cancer enzymes, detoxifies carcinogens, prevents bacteria from converting nitrates into

		substances that make carcinogens.
Beta carotene	Dark, green leafy greens, red, orange and yellow vegetables	A carotenoid stored in the liver, converts to Vitamin A. Powerful antioxidant. May be dangerous in large doses.
Flavenoids	Most fruits and vegetables	A broad category of plant phenolics made up of more than 4,000 compounds. Many positive attributes of flavenoids include defending cells from carcinogens, curbing oxidation of LDL and preventing blood clotting.
Genistein	Soy, dried beans and peas, lentils	An isoflavone. Reduces menopausal symptoms, protects against estrogen-promoted cancers, may play role in heart disease protection. May also have a role in bone health.
Isoflavens	Soy, dried beans and peas	Genistein and daidzein are the most prominent.
Lutein	Broccoli carrots, corn, tomatoes, spinach greens	Antioxidant. These yellow pigments believed to protect the eyes from age related macular degeneration. Also associated with decreased risk of lung disease.
Lycopene	Tomatoes and tomato products, pink grapefruit, watermelon, red peppers, guava	Protective against prostate cancer. May play a role in lowering heart disease risk and reduction of breast cancer. Cooking may increase its availability.
Phytosterols	Soybeans, other legumes, cucumbers, almonds, cashews, peanuts, seeds (sesame, sunflower), whole wheat, corn, squash, yams, tomatoes, eggplant, peppers, cabbage, soy	May be responsible for the cholesterol-lowering properties of mono and polyunsaturated oils and help block the absorption of cholesterol. May block estrogen promotion of breast cancer activity.
Sulforaphane	Broccoli, sprouts, broccoli, cruciferous vegetables, mustard, horseradish	Anti-cancer agent, prevents tumor cell growth. May even shrink tumors. May also protect against breast and cigarette-smoking induced cancer.
Zeaxanthin	Corn, eggs, spinach, collard greens	Strong antioxidant believed to filter out harmful blue light and protect against macular degeneration in the eye.

Source: CM Coughlin and RM DeBusk "Phytonutrients and Zoonutrients" Integrative Medicine. Your Quick Reference Guide. Integrative Medicine, Inc. 1998. B. Golman, Phytopia Cookbook. 1998. M. Bittman and J. Willoughby. "Natures Food By Design" Special Report: Eating Well - March/April 1992.