

Nutrition & Breast Cancer

*Ida & Joseph Friend Cancer Resource Center
UCSF Helen Diller Family Comprehensive Cancer Center
University of California, San Francisco*

This is an abbreviated handout; the full document is available online at http://cancer.ucsf.edu/crc/nutrition_breast.pdf

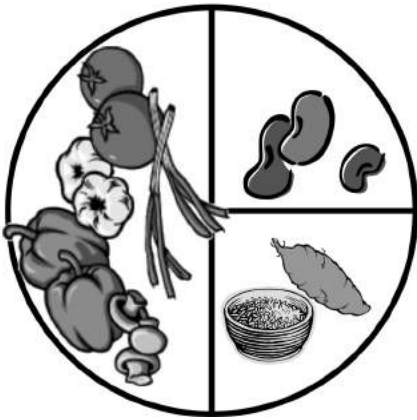
Good nutrition may reduce the incidence of breast cancer and the risk of breast cancer progression or recurrence. There are many studies in progress to help further understand how diet and cancer are related. We do know that improved nutrition reduces risk of chronic diseases, such as diabetes, obesity, hypertension and heart disease, and also enhances overall quality of life. It is estimated that one third of cancer deaths in the U.S. can be attributed to diet in adulthood [1].

Healthy Diet Guidelines for Reducing Breast Cancer Risk

- Plant-based diet
 - Plenty of fruits and vegetables
 - Eat 8 to 10 colorful fruit and vegetable servings daily
 - ◆ Two to three pieces of fruit
 - ◆ One cup or more of vegetables with lunch and dinner
 - ◆ 8 fl oz vegetable juice
 - ◆ Consume herbs and spices daily
 - High fiber – beans/legumes, seeds, whole grains
 - ◆ Consume 30 to 45 grams of fiber daily
 - ◆ You will likely meet your fiber goal if you eat 8 to 10 servings of fruits and vegetables plus one serving of beans/legumes, one serving of chia and/or flax seed, or at least two servings of whole grains daily.
- Include protein with every meal - aim to include plant protein daily
- Low/moderate fat diet with emphasis on healthy fats
 - Limit fatty & processed meats, and dairy
 - Include healthy fats → cold-water fish, chia seeds, flaxseeds, walnuts, soybeans, olive oil, avocados
 - Eat chia seeds and ground flax daily → 1-2 Tbsp daily

- Limit processed and refined grains/flours/sugars
 - Keep WHITE off your plate: bread, pasta, rice, cream sauces, cakes, and more.
- Drink plenty of fluids, water or non-caffeinated beverages, daily to help meet fluid needs
 - Limit alcohol consumption
 - Drink 1 to 4 cups of green tea daily
- Engage in daily physical activity to help achieve and/or maintain a healthy weight
- Ask your doctor about having a vitamin D blood test (serum 25 (OH)-vitamin D level). Maintain your level above 40 ng/ml through diet and supplements

Plant based diet



Healthy Plate Diagram

Fill your plate with approximately 50% (or more) vegetables, 25% (or more) protein, and up to 25% starchy vegetable or whole grain.

A lifelong commitment to a plant based diet may lower a woman's risk of developing breast cancer and may also reduce the risk of recurrent breast cancer [2-3]. A plant based diet consists primarily of fruits, vegetables, beans/legumes, nuts/seeds, and whole grains.

FRUITS AND VEGETABLES

Contain vitamins, minerals, fiber, and various cancer-fighting phytonutrients (health-promoting plant compounds). Vibrant, intense **COLOR** is one indicator of phytonutrient content. There is extensive and consistent evidence that diets high in fruits and vegetables are associated with decreased risks of many cancers, and while results for breast cancer risk are not yet conclusive, they are promising [2-26]. Some evidence suggests that the cruciferous vegetables, in particular, are associated with a reduced risk of breast cancer [32, 59-65].

Phytonutrient Rich Food Examples

Nutrient	Dietary Sources	Recommendation
Beta-carotene	Carrots, sweet potatoes, winter squash, cantaloupe, and mango	Include these fruits and vegetables daily.
Cruciferous vegetables	Arugula, broccoli, Brussels sprouts, cabbage, cauliflower, collard greens, horseradish, kale, kohlrabi, mustard greens, radishes, rutabaga, turnips and turnip greens, and watercress	Include these vegetables daily.
Pomegranate	Pomegranate	Consider including pomegranate or pomegranate concentrate on a regular basis.

Organic Produce

Organic fruits and vegetables have fewer total pesticides, lower levels of pesticides, and less overall pesticide toxicity than fruits and vegetables grown with chemical pesticides. Although more research is needed, recent evidence indicates a significant increase in antioxidants in organic and sustainably grown foods versus conventionally grown foods [90-95]. Certain pesticides known as environmental pollutants have been associated with estrogen-related disorders due to their potential estrogenic and anti-estrogenic properties [94]. Listed below are produce with the most and least pesticide contamination, both in terms of number of pesticides used and the level of pesticide concentration on an average sampling. Thus, for the fruits and vegetables shown on the most contaminated list, it is wise to buy organic. Alternatively, if organic choices are not available, you may want to consider substituting with produce that tends to contain the least amount of pesticides.

Produce most contaminated by pesticides:	Produce least contaminated by pesticides:
Apples	Avocados
Peaches	Sweet corn
Nectarines	Pineapple
Strawberries	Cabbage
Grapes	Sweet peas
Celery	Onions
Spinach	Asparagus
Sweet bell peppers	Mangos
Cucumbers	Papayas
Cherry tomatoes	Kiwi
Snap peas - imported	Eggplant
Potatoes	Grapefruit

**Adapted from Environmental Working Group – A Shopper’s Guide to Pesticides in Produce

- **It is most important**, to eat fruits and vegetables – organic or conventional. If the availability or cost of organic produce is a barrier, you may wish to avoid the fruits and vegetables that have the highest pesticide residue content.

FIBER – A PLANT-BASED DIET IS NATURALLY HIGH IN FIBER

A diet rich in natural fiber obtained from fruits, vegetables, legumes (for example: lentils, split peas, black beans, pinto beans), and whole-grains may reduce cancer risk and/or reduce risk of cancer progression. Fiber binds to toxic compounds and carcinogens, which are then later eliminated from the body [102]. A high fiber diet is also associated with less obesity [105] - a risk factor for postmenopausal breast cancer.

High-Fiber Sources

FRUITS:

Food	Serving Size	Fiber Grams/ Serving
Apple	1 medium	3.7
Banana	1 medium	2.8
Blackberries	1/2 cup	1.9
Blueberries	1 cup	1.3
Cantaloupe	1/2 cup	6.0
Figs (dried)	1/4 cup	6.0
Grapefruit	1 medium	3.4
Grapes	1 cup	1.6
Guava	1 medium	4.9
Kiwi	1 medium	2.6
Orange	1 medium	3.1
Pear	1 medium	4.0
Persimmon	1 medium	6.0
Prunes	1/4 cup	3.1

GRAINS & OTHER PRODUCTS:

Food	Serving Size	Fiber Grams/ Serving
Amaranth	1/4 cup dry	7.4
Barley	1/2 cup cooked	3.0
Beans, black	1/2 cup cooked	8.3
Beans, red kidney	1/2 cup cooked	8.2
Beans, garbanzo	1/2 cup cooked	5.0
Bran cereals	3/4 cup	Check labels (5.0-22.0)
Brown rice	1/2 cup cooked	1.4
Bulgur	1/2 cup cooked	4.0
Oatmeal	1/2 cup cooked	2.0
Peanuts	1/4 cup	2.9
Quinoa	1/4 cup dry	2.5

VEGETABLES:

Food	Serving Size	Fiber Grams/ Serving
Artichokes	1 medium	6.9
Beets	1/2 cup cooked	1.7
Broccoli	1/2 cup cooked	2.3
Brussel sprouts	1/2 cup cooked	2.0
Carrots	1/2 cup cooked	2.6
Kale	1/2 cup cooked	1.3
Lima beans	1/2 cup cooked	4.5
Peas, green	1/2 cup cooked	4.4
Spinach	1/2 cup cooked	2.2
Squash, winter-type	1/2 cup cooked	3.4
Sweet potatoes (yams)	1/2 cup cooked	2.7

SUGARS AND THE ROLE OF INSULIN

High sugar foods are generally highly processed and refined, low in nutrient value, and also low in dietary fiber. In addition, these foods appear to increase serum insulin and serum insulin-like growth factor (IGF-I) levels [127], which stimulate cancer cell growth. Obesity and high fasting insulin levels in the blood have been associated with a poorer prognosis in women with breast cancer [146]. High insulin levels may contribute to the development of breast cancer in overweight or obese women [145].

Sugars & Insulin – Bottom Line

- To help control your insulin level:
 - Eat a high-fiber diet with limited refined/processed foods
 - Follow a low/moderate fat diet rich in omega-3 fatty acids
 - When you eat foods rich in carbohydrates like fruit, starchy vegetables, and grains, include protein at same meal/snack
 - Limit or avoid alcohol
 - Exercise
 - Achieve and/or maintain a healthy body weight

HEALTHY FAT DIET

Aim for close to 25-30% of your total calories from fat, with less than 8% of total calories from saturated fat. Likely more important, research indicates that the type of fat may be of paramount significance.

Essential Fatty Acids (EFA)

Essential fatty acids, namely omega-3 and omega-6 fatty acids, are necessary for the formation of healthy cell membranes, the proper development and functioning of the brain and nervous system, and for the production of hormone-like substances called eicosanoids (thromboxanes, leukotrienes, prostaglandins). Among other body functions, these chemicals regulate immune and inflammatory responses.

Eicosanoids formed from the omega-6 fatty acids have the potential to increase blood pressure, inflammation, platelet aggregation, allergic reactions and cell proliferation. Those formed from the omega-3 fatty acids have opposing affects. Current research suggests that the levels of essential fatty acids and the balance between them may play a critical role in the prevention and treatment of cancer.

Fat – Bottom Line

- Aim for low to moderate total fat intake; focus on type and quality. Note that all fats are equally high in calories.
- Limit animal fats.
- Avoid hydrogenated fats.
- Focus on extra-virgin olive oil, avocados, and nuts as healthy fat sources.
- Increase omega-3 fatty acids.

Fatty Acid	Dietary Sources	Recommendation
Saturated fatty acids	Meats, poultry skin, baked goods, coconut oil, and whole milk dairy products, including butter, cheese, and ice cream	Reduce or eliminate meat and whole milk dairy products.
Trans fatty acids	Margarine, fried foods, commercial peanut butter, salad dressings and various processed foods including breads, crackers, cereals, and cookies	Avoid trans or hydrogenated fats. Products may be labeled “trans fat free” if they contain less than 0.5 mg per serving.
Omega-9 fatty acids	Extra-virgin olive oil, almond oil, canola oil, macadamia nut oil, almonds, and avocados	Include these healthy fats daily. Limit consumption of nuts to no more than ¼ cup with meal or snack to limit total fat and calories.

<p>Omega-3 fatty acids: EPA and DHA</p> <p>ALA</p>	<p>Cold-water fish (for example: salmon, sardines, black cod, trout, herring), and DHA-enriched eggs</p> <p>Flaxseeds, chia seeds, walnuts, hempseeds, and pumpkin seeds</p>	<p>Include these healthy fats daily through diet and/or supplements.</p> <p>It may be wise to consume cold water fish or fish oil supplements at least twice weekly to obtain an adequate amount of EPA and DHA.</p> <p>If you choose to use a supplement, opt for one that is highest in EPA and DHA concentration.</p>
<p>Omega-6 fatty acids: Arachidonic acid</p> <p>Linoleic acid</p>	<p>Meats, butter, egg yolks, whole milk, and whole milk dairy products</p> <p>Common vegetable oils, such as corn oil, safflower oil, sunflower oil, and cottonseed oil, and processed foods made with these oils</p>	<p>Reduce or eliminate meat and whole milk dairy products.</p> <p>Limit consumption of linoleic acid-rich oils.</p> <p>Substitute an omega-9 fatty acid-rich oil for your current cooking oil or fat.</p>

HEALTHY BREAST CANCER DIET RECOMMENDATIONS

Food Category	Summary	Recommendation
Fruits and vegetables	<p>One serving = ½ cup fruit or vegetable 1 cup raw leafy greens ¼ cup dried fruit or vegetable 6 oz fruit or vegetable juice</p> <p>Eat 1 cup or more vegetables with lunch and dinner.</p>	<p>At least 5, preferably 8-10 total servings daily [230]</p> <p>5 or more vegetable servings</p> <p>3 fruit servings</p>
Fiber	<p>Choose breads with 3 or more grams of fiber per slice.</p> <p>First ingredient on the label should be whole or sprouted grain flour, not white flour, unbleached white flour, or enriched wheat flour.</p> <p>Whole grains include oats, barley, brown rice, quinoa, amaranth, bulgur, millet, buckwheat, spelt, wild rice, whole wheat, and teff.</p>	<p>30-45 grams daily</p> <p>This goal can be achieved by meeting your fruit and vegetable goal plus one serving of chia/flax seeds or one serving of legumes or at least two servings of whole grains.</p>

Refined carbohydrates and sugars	Dietary sources include products made with refined flours (for example: white bread, white rice, white pasta) or refined grains, alcohol, sodas, drinks containing added sugars, and desserts, such as candy, cookies, cakes, and pastries.	Limit or avoid consumption.
Meat	Dietary sources include beef, pork, and lamb. Processed meats include deli meats, bacon, sausages, and hot dogs.	Reduce or eliminate meat consumption. Avoid processed, grilled or fried meats.

GENOTOXINS: Heterocyclic Amines (HCAs) & Polycyclic Aromatic Hydrocarbons (PAHs)

Genotoxins are natural components in meat, such as amino acids, creatine, and polysaccharide precursors, are converted to HCAs during high-temperature cooking such as cooking on a grill. HCAs are known to cause cancer in laboratory animals [231-233]. While human research is forthcoming, the majority of studies [228, 231-236], although not all [237-238] have observed a significant association between HCAs and breast cancer. Meat can potentially be made “safer” to eat by being cooked in a way that does not lead to HCA formation.

- o Choose lean, well-trimmed meats to grill.
- o Using marinades significantly reduces the amount of HCAs.
- o Brief microwave preheating substantially reduces HCA content of cooked meat.
- o Small portions require less time on the grill.

ALCOHOL

Regular consumption of alcohol may increase the risk for breast cancer [244-254]. A recent review reported that data from many well-designed studies consistently shows a small rise in breast cancer risk with increasing consumption of alcohol [249]. A recent study found that as little as a half a glass of wine a day raised a woman’s risk of developing breast cancer by 6% (increased risk by 18% in postmenopausal women) [244]. Alcohol appears to increase estrogen levels [263-267].

Alcohol – Bottom Line

- It is best to limit or avoid alcohol.

BODY MASS

Population studies suggest a positive association between body mass and postmenopausal breast cancer in many [273-281], but not all studies [282-284]. Results from a systematic review showed that a larger waist size increased risk of breast cancer among premenopausal women [290]. This study supports the idea that central obesity is of greater concern than general obesity in regards to breast cancer risk. Additionally, overweight or obesity is associated with poorer prognosis in the majority of the studies that have examined body mass and breast cancer [151, 294-300]. Many studies [151, 294-305], though not all [306], report increased BMI or body weight to be a significant risk factor for recurrent disease, survival, or both. It has been suggested that the association of obesity with poorer outcomes after breast cancer observed in previous studies may be driven predominantly by the relationship between morbid obesity (≥ 40 kg/m²) and mortality. High BMI and breast cancer may be related due to increased estrogen [277, 308-310] and elevated insulin [310] and IGF, which can stimulate cell proliferation [140, 308]. Furthermore, research suggests a potential link between obesity, diabetes mellitus and breast cancer [316].

PHYSICAL ACTIVITY

Low levels of physical exercise appear to be associated with the risk of breast cancer [249, 276, 319-322]. Similarly, physical activity seems to reduce the risk of breast cancer [323-331]. Lifetime total physical activity has been associated with a decreased risk of breast cancer [332-335] and death from breast cancer [336-337]. Increased physical activity following breast cancer diagnosis significantly decreased the risk of dying from breast cancer and improved overall survival when compared with women who exercised < 2.8 MET-h/wk* [340]. Women participating in 9 MET-h/wk or more (≈ 3 h/wk of fast walking) of physical activity before diagnosis had a lower all-cause mortality compared with inactive women [344]. Women participating in ≥ 9 or more MET-h/wk of physical activity after diagnosis had lower breast cancer mortality and lower all-cause mortality. Additionally, physical activity can help ease cancer-related fatigue during and following cancer treatment [228, 229, 348] and improve quality of life among survivors [346-348]. A review of survivorship studies found that most reports demonstrated that physical activity led to an improved overall and breast cancer-specific survival [349]. This effect may even be greatest in older women. Healthy weight control is encouraged with an emphasis on exercise to preserve or increase lean muscle mass.

*MET-h : Metabolic Equivalent, or MET, is used as a means of expressing the intensity and energy expenditure of activities in a way comparable among persons of different weight. One MET is defined as 1 kcal/kg/hour and is roughly equivalent to the energy cost of sitting quietly.

Additional Nutritional and Lifestyle Factors for Breast Cancer Survivors

Nutrient/Phytonutrient	Summary	Recommendation
Antioxidants	Found in abundance in plant foods such as fruits, vegetables, herbs, spices, legumes, nuts, seeds and whole grains	Note that patients may be advised NOT to consume high-dose antioxidant supplements during chemotherapy or radiation therapy. Antioxidant consumption via food sources and a basic multivitamin supplement are considered safe.
Selenium – an antioxidant that scavenges free radicals and suppresses damage due to oxidation	Dietary sources include Brazil nuts, seafood, enriched brewer's yeast, and grains. Selenium content depends somewhat on the amount of selenium in the soil in which the products are grown.	200 mcg selenium daily through diet and/or supplements Two Brazil nuts provide 200 mcg selenium.
Turmeric (curcumin) - the yellow pigment and active component of turmeric and many curries, is a potent antioxidant, that exhibits chemopreventive and growth inhibitory activity in several tumor cell lines [369-375].	A deep orange-yellow spice commonly used in curries and Indian cuisine.	Eat liberally.
Vitamin C	Dietary sources include various fruits and vegetables, including papaya, citrus fruits, kiwi, cantaloupe, mango, strawberries, bell peppers, broccoli, and tomatoes.	Include these fruits and vegetables daily.
Vitamin E - acts as a cellular antioxidant and an anti-proliferating agent	Dietary sources include vegetable oils, wheat germ, sweet potatoes, nuts, seeds, and avocados.	Eat vitamin E-rich foods regularly. More research is needed to assess whether or not supplements would be beneficial.
Resveratrol - a polyphenol found primarily in red grape skins with known antioxidant and anti-inflammatory properties	Dietary sources include grapes, grape products, peanuts, soy, mulberries, and cranberries.	Eat resveratrol-rich foods regularly. More research is needed to assess whether or not supplements would be beneficial.

Food or Beverage	Summary	Recommendation
Flaxseed	<p>Good source of omega-3 fatty acids and fiber, contains protein, calcium, potassium, B vitamins, iron, and boron.</p> <p>Opt for ground flax seeds rather than whole flax seeds, flax seed oil, flax supplements to increase bioavailability.</p> <p>Flax seeds may be ground in a coffee grinder, blender, or food processor.</p>	<p>2 Tbsp ground flaxseed daily</p> <p>Flax can have a laxative- like effect, thus, it is wise to gradually increase consumption.</p> <p>Sprinkle into various foods and beverages, including hot cereals, tomato sauces, fruit smoothies, brown rice or other grains.</p> <p>Store flax in the refrigerator or freezer.</p>
Green tea	<p>Green tea contains does contain caffeine though much less than coffee or black tea.</p> <p>If opting for decaffeinated green tea, opt for those naturally decaffeinated with water as typical caffeine extraction results in a significant loss of phytonutrients.</p>	<p>1-4 cups daily</p>
Soy	<p>Contains various nutrients, including protein, fiber, calcium, and B vitamins.</p> <p>Rich in antioxidants*, known as isoflavones, namely genistein and daidzein.</p> <p>Among others, dietary sources include soybeans, edamame, tofu, soymilk, tempeh, miso, and soy nuts.</p>	<p>Unless soy has been a part of your diet for years, postmenopausal individuals with ER+ breast cancer may be advised to limit soy consumption to 1-3 daily servings.</p> <p>Soy supplements or isoflavone extracts are not recommended.</p>
Vitamin D	<p>A fat-soluble vitamin that we generate through skin synthesis of sunlight (ultraviolet rays).</p> <p>Dietary sources include cold-water fish, eggs, and fortified products, such as milk, soy milk, and cereals.</p>	<p>1,000-4,000 IU daily</p> <p>Maintain serum 25 (OH)-vitamin D >40 ng/mL.</p> <p>Ask your provider about checking your vitamin D levels</p>

BONE HEALTH

Bone Health – Bottom Line

- Balanced diet – high in fruits and vegetables
- Calcium
 - Aim for 3 rich sources daily.
 - Include a supplement if necessary.
- Vitamin D
 - Meet needs from sun, multivitamin, or other supplement.
 - Consider serum vitamin D test.
- Exercise
 - Weight-bearing exercise for at least 30 minutes on most days.
- Good posture
- Request to have a full body DEXA scan.

Bone Building Nutrients

Nutrient*	Dietary Sources	Function	Recommendation
Calcium	Dairy products, canned fish with soft bones, beans, leafy greens (especially collard greens, bok choy, and kale), tofu, almonds, fortified products, such as soy milk, cereal, and orange juice	↑ calcium absorption and bioavailability from foods, especially plant sources Vitamin D is essential for calcium absorption.	1000-1200 mg daily
Vitamin K	Dark leafy greens, liver, tomatoes, soybeans, and garbanzo beans Also produced by intestinal bacteria	Associated with ↓ bone turnover and ↓ urinary calcium excretion.	90 mcg daily
Phosphorus	Meat, poultry, fish, eggs, milk, products, legumes, and nuts	Combines with calcium to strengthen bones.	700 mg daily
Magnesium	Whole grains, nuts, seeds, spinach, and most fruits and vegetables	Important in calcium and potassium uptake.	320 mg daily
Potassium	Bananas, strawberries, tomatoes, prunes, potatoes, spinach, and beans	Associated with ↓ urinary calcium and phosphorus excretion.	4700 mg daily

Boron	Apples, avocados, beans, milk, peanuts, peanut butter, pecans, raisins, prunes, and potatoes	Improves calcium absorption. ↓ effects of vitamin D and magnesium deficiency.	2 mg daily
Zinc	Seafood, meats, tofu, whole grains, black-eyed peas, wheat bran and germ	Important in calcium uptake and immune function.	8-15 mg daily

* Vitamin D is listed in the previous table

For additional information or resources, please visit the Ida and Joseph Friend Cancer Resource Center at 1600 Divisadero St. on the first floor , or call at (415) 885-3693. The information in this publication is designed for educational purposes only and is not intended to replace the advice of your physician or health care provider, as each patient’s circumstances are individual. We encourage you to discuss with your physician any questions and concerns that you may have.

Recipes

Green Smoothie

Ingredients:

- 3-5 cups greens (spinach, kale, collards, or other)
- 1 tbsp chia seeds
- 1-2 tbsp ground flax seeds
- 3/4 cup unsweetened almond milk
- 1/2 cup frozen blueberries (or other fruit)
- 1 serving unsweetened protein powder

Place liquid in blender followed by the remaining ingredients. Blend and enjoy!

Makes 16 ounces.

Nutrition Information (per 16 oz):

Calories: 363	Dietary fiber: 15gm	Protein: 30 gm
Sodium: 300 mg	Fat: 14.6 gm	Calcium: 633 mg
Saturated fat: 1.6 gm	Iron: 5 mg	Carbohydrates: 34 gm

Recipe developed by Natalie Ledesma, MS, RD, CSO

Baked Tofu

Ingredients:

- 1 pound tofu, firm, drained
- 3 tablespoons low sodium tamari or other soy sauce
- 1 teaspoon toasted sesame oil
- 2 cloves garlic, minced
- 1 teaspoon finely minced gingerroot
- ½ teaspoon red pepper flakes
- 1 teaspoon brown rice syrup or dark brown sugar

Chop drained firm tofu into 1” cubes. Place tofu cubes in a glass baking dish. Mix all of the remaining ingredients in a small bowl, then pour the mixture over the tofu. Lift the tofu a bit to make sure that marinade gets all over it. Refrigerate and let it marinate for 30 to 60 minutes. Preheat the oven to 350 degrees. Lightly oil a baking sheet and top with tofu. Bake for 10 to 15 minutes or until thoroughly heated and dry.

Makes four 4-ounce servings.

Nutrition Information (per 4 oz serving):

Calories: 120	Dietary fiber: <1gm	Protein: 8 gm
Sodium: 575 mg	Fat: 5 gm	Calcium: 155 mg
Saturated fat: <1 gm	Iron: 1.4 mg	

Recipe from the Hippy Gourmet's Quick and Simple Cookbook for Healthy Eating

Washington Insider Salad

Ingredients:

- 1 can (15 oz) kidney beans, drained
- 1 can (15 oz) black eyed peas, drained
- 1 1/2 cups cooked barley (substitute quinoa, wild rice, or brown rice to make gluten free)
- 6 tbsp cilantro, chopped finely
- 1 can (11 oz) corn
- 1 1/2 cups tomatoes, diced
- 3 tbsp balsamic vinegar
- 2 tbsp olive oil

Prepare vegetables. Mix all ingredients together, and serve on a bed of dark green leafy lettuce. Add salt and pepper to taste.

Makes 8 servings (1 cup each).

Nutrition Information (per serving):

Calories: 215		
Protein: 10 gm	Fat: 4 gm	Dietary fiber: 9 gm

Recipe developed by Sous Chef Chris at the Occidental Grill, Washington D.C.

Spinach Spread

Ingredients:

- 1 package (10.5 ounces) silken tofu
- 1 tbsp lemon juice
- 1/4 tsp garlic powder
- 3/4 tsp onion powder
- 1/2 tsp dried tarragon
- 1/4 tsp salt
- 1 box (10 ounce) frozen chopped spinach, thawed
- 1 cup coarsely shredded carrots
- 1/4 cup chopped green onion

Puree the tofu and lemon juice in blender until smooth. Whirl in the garlic and onion powders, tarragon, and salt just to blend. Scrape into a mixing bowl. Squeeze the spinach as dry as possible. Stir it into the tofu, along with the carrots and green onion. Mix well. Serve with crackers, pita triangles, or vegetables.

Makes 8 servings (1/4 cup each).

Nutrition information (per serving):

Calories: 39	Sodium: 82 mg	Fat: 1 gm
Calcium: 51 mg	Saturated fat: 0 gm	Carbohydrate: 5 gm
Protein: 4 gm	Dietary Fiber: 2 gm	

Recipe from the U.S. Soyfoods Directory.

Curried Hummus

Ingredients:

- 1/4 cup currants
- 2 cups cooked chickpeas, or 1 15-ounce can, drained and rinsed
- 2 tbsp water
- 2 tbsp freshly squeezed lemon juice
- 1 tbsp tahini
- 1 tbsp extra-virgin olive oil
- 1 tsp curry powder
- 1 tsp ground ginger
- 1/2 tsp sea salt

Place the currants in a small bowl of hot water to soak and plump up. Combine the chickpeas, water, lemon juice, tahini, olive oil, curry powder, ginger, and salt in a food processor and process until smooth. Transfer to a mixing bowl and adjust the seasoning to taste. Add a spritz of lemon if it needs a little extra zing. Before serving drain the currants thoroughly and stir them into the hummus. Serve with chopped, raw vegetables or whole grain crackers.

Makes 6 servings.

Nutrition Information (per serving):

Calories: 180	Carbohydrate: 27 gm	Protein: 7 gm	Dietary fiber: 7 gm
Fat: 5.7 gm	Sodium: 630 mg		

Recipe from The Cancer-Fighting Kitchen by Rebecca Katz.

Alaska Salmon Bake with Walnut Crunch Coating

Ingredients:

- 1 pound salmon fillets, thawed if necessary
- 2 tbsp Dijon-style mustard
- 1-2 tbsp olive oil
- 4 tsp honey
- 1/4 cup bread crumbs
- 1/4 cup walnuts, finely chopped
- 2 tsp parsley, chopped
- Salt and pepper to taste
- Lemon wedges

Mix together mustard, olive oil, and honey in a small bowl; set aside. Mix together bread crumbs, walnuts, and parsley in a small bowl; set aside. Season each salmon fillet with salt and pepper. Place on a lightly greased baking sheet or broiling pan. Brush each fillet with mustard-honey mixture. Pat top of each fillet with bread crumb mixture. Bake at 450 F for 10 minutes per inch of thickness or until salmon just flakes when tested with a fork. Serve with lemon wedges.

Makes 4 servings (4 oz each).

Nutrition Information (per serving)

Calories: 228

Protein: 20 gm

Fat: 12 gm

Omega-3 fatty acids: 1.7 gm

Adapted from Alaska Seafood Marketing Institute.

Pumpkin Oat Bars (can be vegan & gluten free)

Ingredients:

- 3 cups gluten free or regular old fashioned oats
- 2 tsp baking powder
- 1/2 tsp baking soda
- 1/4 tsp salt
- 1 1/4 tsp cinnamon
- 1/8 tsp nutmeg
- pinch of ground cloves
- 1 cup canned pumpkin
- 2 tsp pure vanilla extract
- 1/2 cup unsweetened applesauce
- 1/2 cup dark brown sugar
- 1 tbsp melted coconut oil
- optional: 1/3 cup regular chocolate chips, dried cranberries, raisins, walnuts

Preheat oven to 350 degrees F. Spray 8×11 or 9 inch baking pan with nonstick cooking spray. Make oat flour: Place oatmeal into blender or food processor and blend for 1-2 minutes until oatmeal resembles flour. You may need to stop blender and stir oats a couple of times to ensure that all oats have been blended.

Place oat flour in a medium bowl. Whisk in baking powder, baking soda, salt and spices; set aside. In a separate large bowl, whisk together pumpkin, brown sugar, vanilla extract, oil, and applesauce for 1-2 minutes until the consistency is smooth and creamy. Slowly add in oat flour mixture and mix until just combined.

If using, gently fold in 1/3 cup of chocolate chips, dried fruit, and/or nuts. Pour batter into prepared pan. Bake for 15-25 minutes or until knife inserted into center comes out clean or with just a few crumbs attached. Timing will depend on what size pan you use, but definitely check around 15 minutes. Once finished baking, cool 10 minutes on wire rack. Cut into 16 slices.

Note: Bars can be frozen.

Makes 16 servings.

Nutrition Information (per serving):

Calories: 107

Carbohydrate: 20 gm

Protein: 3 gm

Dietary fiber: 2.6 gm

Fat: 2 gm

Sodium: 146 mg

Adapted from the Ambitious Kitchen Blog.

Dilled Salmon Salad with Peas

Ingredients:

- 1 can (15 oz) salmon, drained
- 1 package (16 oz) frozen peas, thawed
- 1/4 cup lemon juice
- 1/4 cup fresh dill (or 1-2 tbsp dried dill)
- 2 tbsp Dijon-style mustard
- 2 shallots, sliced thinly (about 1/2 cup)
- 1 bunch radishes (about 11 medium), thinly sliced
- 6 cups red leaf lettuce
- Salt and pepper to taste

Drain salmon, place in a mixing bowl, and break into pieces. Prepare the lemon juice, shallots, radishes, and lettuce. Add to the salmon the peas, lemon juice, dill, mustard, shallots, and radishes. Mix together gently. Add salt and pepper to taste. Serve salmon mixture over lettuce.

Makes 6 servings (2 cups each).

Nutrition Information (per serving):

Calories: 160

Protein: 17 gm

Fat: 4 gm

Dietary fiber: 5 gm

Adapted from the Women's Healthy Eating & Living Study (WHEL) at the University of California, San Diego. Developed by Vicky Newman, MS, RD, WHEL nutrition coordinator.

Neat Loaf

Ingredients:

- 2 cups cooked brown rice
- 1 cup walnuts, finely chopped
- 1 onion, finely chopped
- 1/2 medium bell pepper, finely chopped
- 2 medium carrots, shredded or finely chopped
- 1 cup wheat germ (could substitute flax seed or almond meal to be gluten-free)
- 1 cup quick-cooking rolled oats
- 1/2 tsp each: thyme, marjoram, sage
- 2 tbsp soy sauce (or gluten-free tamari)
- 2 tbsp stone ground or Dijon mustard
- Barbecue sauce or ketchup

Preheat the oven to 350 F. Combine all the ingredients except the barbecue sauce or ketchup. Mix for 2 minutes with a large spoon. This will help bind it together. Pat into an oil-sprayed 5x9" loaf pan and top with barbecue sauce or ketchup. Bake for 60 minutes. Let stand 10 minutes before serving.

Makes 8-10 servings.

Nutrition Information (per serving):

Calories: 204

Sodium: 248 mg

Protein: 9 gm

Cholesterol: 0 mg

Fat: 9 gm

Carbohydrates: 19 mg

Recipe from The Peaceful Palate written by Jennifer Raymond.

Raw Kale Salad with Aged Balsamic Vinaigrette

Ingredients:

- 1 large bunch (about 1 pound) lacinato kale (also called "dinosaur" or "Tuscan" kale)
- Kosher salt and freshly ground pepper
- 2 tsp Dijon mustard (optional)
- 2 tbsp good quality balsamic vinegar
- 1/4 cup extra-virgin olive oil
- Juice of 1/2 lemon (optional)
- 1 medium shallot, finely chopped (optional)
- A handful toasted nuts such as almonds or walnuts (about 1 ounce or 1/4 cup)
- 1 apple, chopped or a handful dried fruit such as currants, cranberries, raisins, dried cherries, etc (about 1 ounce or 1/4 cup)

Strip the leaves off the stems. (Save the stems for another use such as green smoothies.) Wash and pat dry the leaves. Stack the leaves and cut them crosswise into strips about 1/4 inch wide. Pile the kale in a salad bowl and sprinkle with 1/4 teaspoon salt. With clean hands, massage the salt into the leaves until the kale begins to feel moist and darken a bit, about 2 or 3 minutes. You can do this well ahead of time, cover the salad with plastic wrap, and leave at room temperature or refrigerate for several hours.

In a small bowl, whisk together the mustard and vinegar. Grind in some pepper and then whisk in the oil. Taste for balance and add as much lemon juice, salt, and pepper as needed to create a vibrant, fresh, sweet/tart balance. Go easy on the salt to account for the salt already on the kale. When ready to serve, toss the greens with the dressing, shallots, apple or dried fruit, and nuts. Serve immediately.

Serves 6 to 8

Nutrition Information (per serving - 1/6 recipe):

Calories: 180	Sodium: 382 mg	Protein: 4 gm	Cholesterol: 0 mg
Fat: 13 gm	Dietary fiber: 2 gm	Carbohydrate: 15 gm	

Recipe adapted from Living On, Living Well, UCSF Survivorship Retreat by Penni Wisner, The Kitchen Coach.

Quinoa/ Sweet Potato Patties

Ingredients:

- 1 1/2 cups sweet potato, peeled and chopped
- 1 cup quinoa
- 2 tbsp parsley, fresh
- 1/2 tsp sea salt
- 2 tsp extra-virgin olive oil

Steam or bake sweet potatoes until done. Drain and mash potatoes. Wash the quinoa well and drain. Dry toast the quinoa in a skillet until slightly browned. Meanwhile, bring a pot of water to a boil. Add the toasted quinoa to the boiling water and cook, with lid off, for ~15 minutes. Drain well. Mix the mashed potatoes and quinoa. Add the parsley and salt. Form 8 patties and place in a lightly oiled pan over medium-high heat. Cook for about 5 minutes on each side and serve warm.

Makes 8 servings.

Nutrition Information (per serving):

Calories: 125	Sodium: 165 mg	Protein: 4 gm	Cholesterol: 0 mg
Fat: 2 gm	Carbohydrate: 22 gm		

Recipe adapted from the Vegetarian Resource Group.

Coconut Quinoa Chia Granola

Ingredients:

- 1 cup rolled oats (or steel cut oats)
- 1/2 cup quinoa, uncooked
- 1/2 cup almonds, coarsely chopped/slivered/sliced
- 1/4 cup chia seeds
- 1/8 tsp sea salt
- 3 tbsp coconut oil
- 3 tbsp maple syrup
- 1 tsp vanilla extract
- 1/4 cup coconut flakes, unsweetened

Preheat oven to 325 degrees F and line baking sheet with parchment paper. In a medium mixing bowl, add oats, quinoa, almonds, chia seeds, salt and mix. In a small bowl, melt coconut oil in a microwave and add maple syrup and vanilla extract. Stir to combine and pour into a bowl with dry ingredients. Mix thoroughly and spread in an even layer on prepared baking sheet. Bake on a third rack from the bottom for 30 minutes. Remove granola from the oven and sprinkle with coconut flakes. Let cool completely and do not touch.

Makes 24 servings.

Nutrition Information (per 2 tbsp serving):

Calories: 60

Sodium: 15 mg

Fiber: 1.1 gm

Cholesterol: 0 mg

Fat: 2.8 gm

Carbohydrate: 7.8 gm

Sugars: 1.9 gm

Recipe adapted from the iFoodReal.com.