

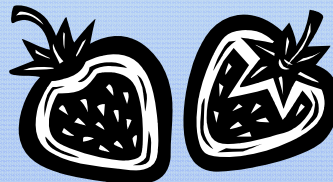
Cancer and Nutrition Therapy

Presented By
Paula Occiano, RD
Brittany Higbee, RD, CSO

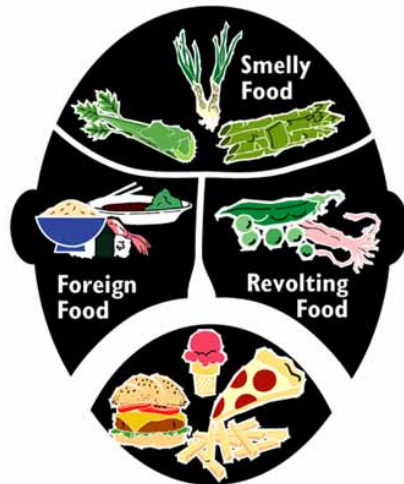


Objective

- Have a basic understanding of Macro and Micro nutrients
- Be empowered to make healthful food choices
- Know how certain foods can help you fight cancer



U.S. DEPT. OF AGRICULTURE
NUTRITION FROWNY FACE



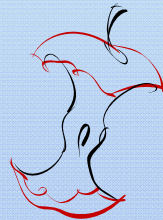
**FOOD
YOU
CAN'T
STAND**
(18 SERVINGS)

**FOOD
YOU LIKE**
(NO SERVINGS)

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Macronutrients

Nutrients needed in large quantities to provide energy and maintain normal function of the body



Carbohydrates



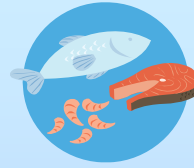
- **Function**
 - Main energy source for all cells, tissue and organs in the body
 - A food source for healthy bacteria in the gut
- **Should make up about 55-65% of daily caloric intake**
 - Percentage may need to be adjusted based on weight and activity level
- **Sources**
 - **Simple**
 - Fruits, dairy products, vegetables, table sugar, candies, regular sodas
 - **Complex**
 - Whole grains, legumes, starchy vegetables

Protein

- **Function**
 - Used in the building, repair and maintenance of:
 - Hair, nails, enzymes, hormones, muscle, bone, blood, skin, cartilage, hemoglobin, immune system
- **Should make up about 10-15% of daily caloric intake**
- **Sources**
 - Fish, poultry, meat, beans, legumes, soy, dairy, nuts, seeds and grains



Protein Cont.



- Glutamine and Arginine
 - Utilized at a high rate by cells of the immune system
 - Glutamine is important in maintaining mucosal lining of gut which plays an integral role in immune function
 - Both promote lymphocyte production & production of cytokines by lymphocytes and macrophages

Fat



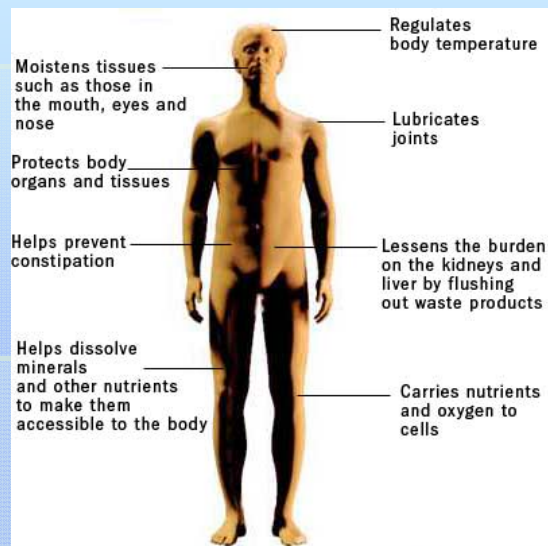
- Function
 - Used for energy, absorption and transportation of nutrients, protection, healthy cell and brain function
 - Should be about 25-30% of daily caloric intake
- Omega – 3 fatty acids (Linoleic acid)
 - Help reduce inflammation
 - Have been linked to the prevention of dementia
 - Sources: fish, flaxseed, walnuts and some fruits and vegetables
- Omega – 6 fatty acids (Linolenic acid)
 - Promote inflammation
 - Noted to be involved in the clotting of blood
 - Sources: poultry, eggs, avocado, vegetable oils, nuts, margarine



Water and Fluids

- Water is the single largest component in the body and makes up about 60% of our body weight
- Typically recommend 1mL of fluid per kcal per day or 30mL per Kg of body wt
 - 2000kcal = 2000ml = 67oz = about 8cups
 - Amount of fluid needed is calculated taking into consideration activity level and presence of fluid overload and dehydration

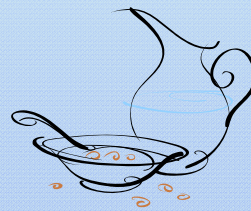
Water and Fluids Cont.



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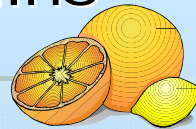
Micronutrients

Nutrients needed in small quantities to help maintain normal function within the body



Water Soluble Vitamins

- Vitamin C
 - Promotes resistance to infection and tissue and wound healing
 - Citrus fruits, Strawberries, cantaloupe, tomatoes, broccoli, peppers
- B Vitamins (thiamin, riboflavin, pyridoxine, cobalamin, niacin, pantothenic acid, biotin, folic acid)
 - Metabolism of carbohydrates, proteins, and fats; DNA synthesis; enhances nerve and immune system function; Promotes cell growth
 - Meats, fortified cereals, dark leafy greens



Fat Soluble Vitamins



- **Vitamin E**
 - Important in immune function by protecting cell membranes and red blood cells
 - Wheat germ, vegetable and soy bean oil, egg yolks, nuts, dark leafy greens
- **Vitamin A**
 - Essential role in vision, growth and development, immune function and reproduction
 - Sweet potatoes, carrots, butternut squash, cantaloupe, apricots, spinach
- **Vitamin D**
 - Essential in bone health as well as maintenance of membranes, and the functions of several different organs (skin, muscles, pancreas, nerves, parathyroid gland, and the immune system)
 - Sun exposure, herring, salmon, fortified milk, sardines, liver



Minerals

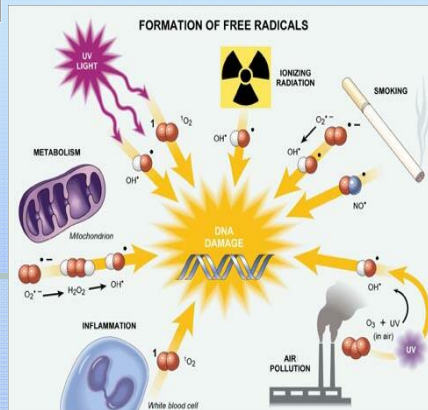


- **Selenium**
 - Protects cells from oxidation
 - Meats, fish, shellfish, brazil nuts, molasses, wheat germ
- **Zinc**
 - Important in immune function, taste, processing DNA, carrying carbon dioxide in the blood, important for nerve signaling to occur
 - Oysters, wheat germ, meats, poultry
- **Calcium**
 - Helps maintain bone health, required for normal nerve communication and muscle function
 - Milk, yogurt, cheese, salmon with bones, spinach, tofu
- **Iron**
 - Involved in red blood cell function
 - Transportation of oxygen
 - Liver, oysters, seafood, meats, fortified cereals



Antioxidants and Phytochemical

- Free radicals are formed at sites of infection and inflammation which can cause damage to healthy cells
 - Free Radicals can be formed naturally in the body to help neutralize viruses and bacterial
 - or can be formed by environmental factors (pollution, cigarette smoke, UV light...)



Antioxidants and Phytochemicals

- Antioxidants and Phytochemicals act like a vacuum and clean up free radicals and damaged cells
- Look for brightly colored fruits and vegetables for higher amounts of antioxidants and phytochemicals



Berries



- Good Source of Vitamin C and Fiber
 - Rich in ellagic acid
 - Acts as an antioxidant
 - Helps the body deactivate specific carcinogens
 - Helps slow the reproduction of cancer cells
 - Strawberries
 - Blueberries
- Flavonoides
 - Anthocyanosides



Cruciferous Vegetables

- Broccoli, cauliflower, cabbage, Brussels sprouts, bok choy, kale
- Glucosinolates
- Crambene
- Indole-3-carbinol
- Isothiocyanates
- Regulate a complex system of bodily enzymes that defend against cancer



Dark Leafy Greens

- Spinach, Kale, Romaine Lettuce, Leafy Lettuce, Mustard Greens, Collard Greens, Chicory, Swiss Chards
- Fiber
- Folate
- Carotenoids
 - Act as an antioxidant
 - Inhibits the growth of certain cancers



Grapes



- Resveratrol (found in the skins of red and purple grapes)
- Potent antioxidant
- Anti-inflammatory properties

Tomatoes

- Lycopene
 - Powerful antioxidant
 - Induction of cell to cell communication
 - Growth control



Herbs and Spices

Antioxidant content of some herbs and spices

1. Cloves	126 mmol/100gm
2. Oregano	40
3. Ginger	22
4. Cinnamon	18
5. Turmeric	16
6. Walnuts	13
7. Basil, dried	12
8. Mustard Seeds	11
9. Curry Powder	10
10. Pecans	10

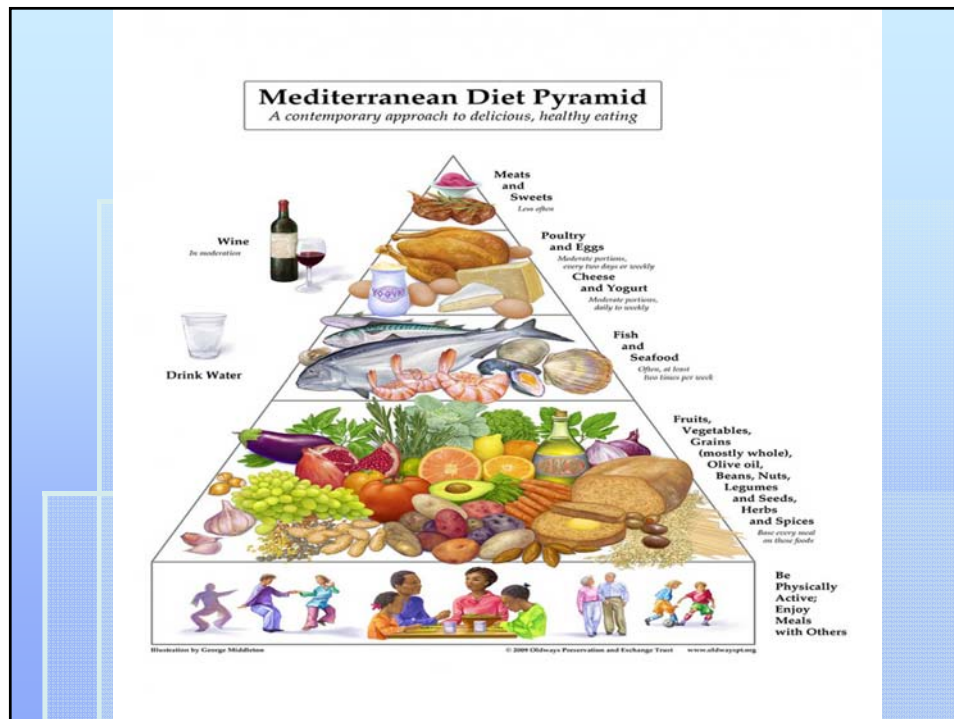


Source: Halvorsen BL et. al. Content of redox-active compounds in foods consumed in the United States. AJCN 84 (1): 895-135, 2006

Teas



- Green Tea
 - 16-30% polyphenols
 - 1 cup of tea: 80-210 mg of polyphenols
- Black Tea
 - 3-10% polyphenols
 - 1 cup of tea: 20-140 mg of polyphenols
 - 2-6% theaflavin



Sample 1 Day Menu

- Breakfast
 - 1 cup oatmeal
 - ½ cup blueberries
 - 7 almonds
 - 6 oz skim milk
- Snack
 - 3 tbsp hummus
 - 1 cup baby carrots
 - 6-8oz green tea



Menu

- Lunch
 - Bowl of black bean soup w/ 4 whole grain crackers
 - Spinach salad
 - dried fruit, nuts, 3oz tuna, olive oil and vinegar dressing
 - 1 peach
 - 4 oz tomato juice
- Snack
 - Apple with 1 tbsp natural peanut butter



Menu



- Dinner
 - 4oz baked salmon
 - ½ cup brown rice
 - 1 cup sauteed bok choy and mushrooms
 - 6-8 oz green tea
- Snack
 - Low fat string cheese with ½ cup purple or red grapes



References



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