Nourishing Your Cells: Using Nutrition to Decrease Inflammation and Promote Gut Health After Cancer

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Presentation Topics

Survivorship Facts

Inflammation and Disease

Anti-Inflammatory Diet

Probiotics and Gut Health

Cooking for Health and Disease Prevention

Survivorship Facts

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Childhood Cancer Survivorship

- 5 year survival rates approaching 80%
- It is estimated that 1:250 adults is a pediatric cancer survivor
- 62% of survivors report at least one chronic health condition: obesity, CVD, diabetes, osteoporosis
- Less than 30% of survivors meet vitamin D and calcium requirements, important for bone health
- 79% of survivors report low intake of fruits and vegetables; and 84% do not follow a low-fat diet

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Inflammation and Diet

"Doctors are learning that one of the best ways to quell inflammation lies not in the medicine cabinet, but in the refrigerator."

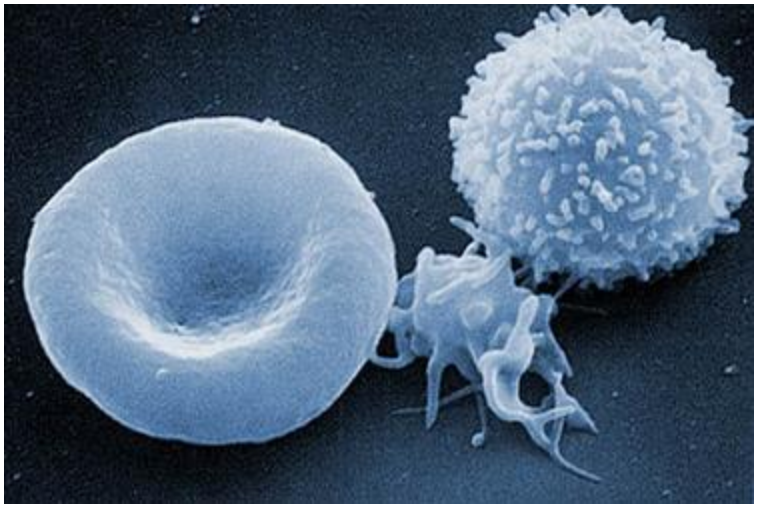
~Harvard Medical School

Inflammation and Disease

Inflammation:

- Is a part of the body's natural defense system
- Can be external and visible as with infections, injury or irritations
- Can be internal as a result of lifestyle factors or disease

There are 2 types of inflammation in the body:



Acute: The body's immune system is activated to repair the injured site or eliminate bacteria to promote healing

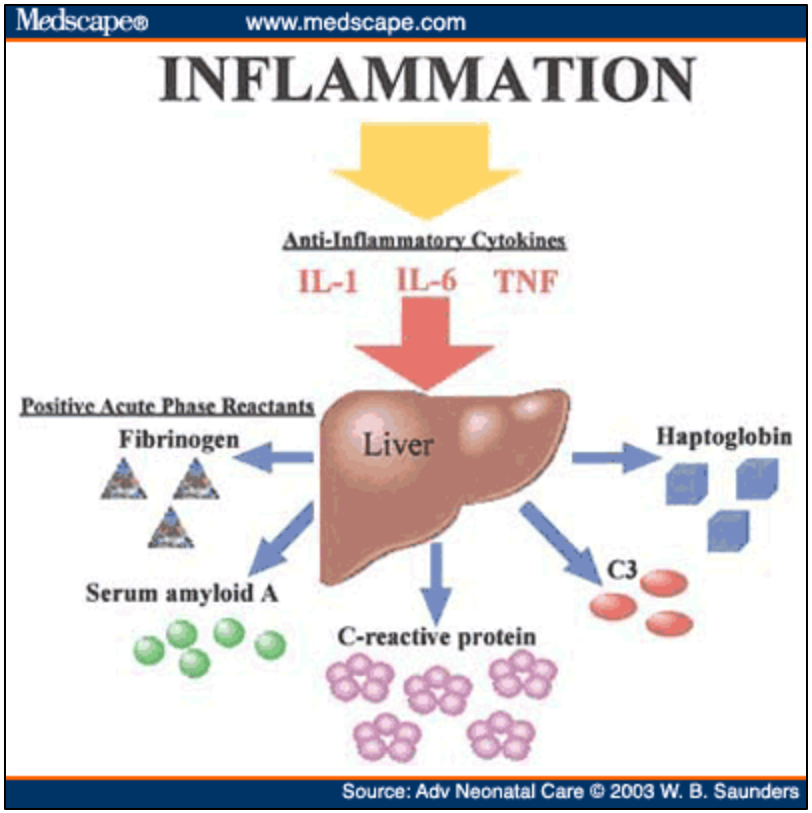
Chronic: Persistent active internal inflammation that causes tissue destruction and can lead to chronic conditions such as atherosclerosis, heart disease, obesity, diabetes, and cancer

Inflammatory Response Indicators

Markers in the
body show the presence
of inflammation

Examples are:

- C-Reactive Protein (CRP)
- Interleukin-6 (IL-6)
- Tumor Necrosis Factor-alpha (TNF-α)



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Inflammation

Research shows the foods we eat and lifestyle choices we make can lower inflammatory markers and reduce the risks of chronic disease, such as diabetes, cardiovascular disease, and some types of cancer

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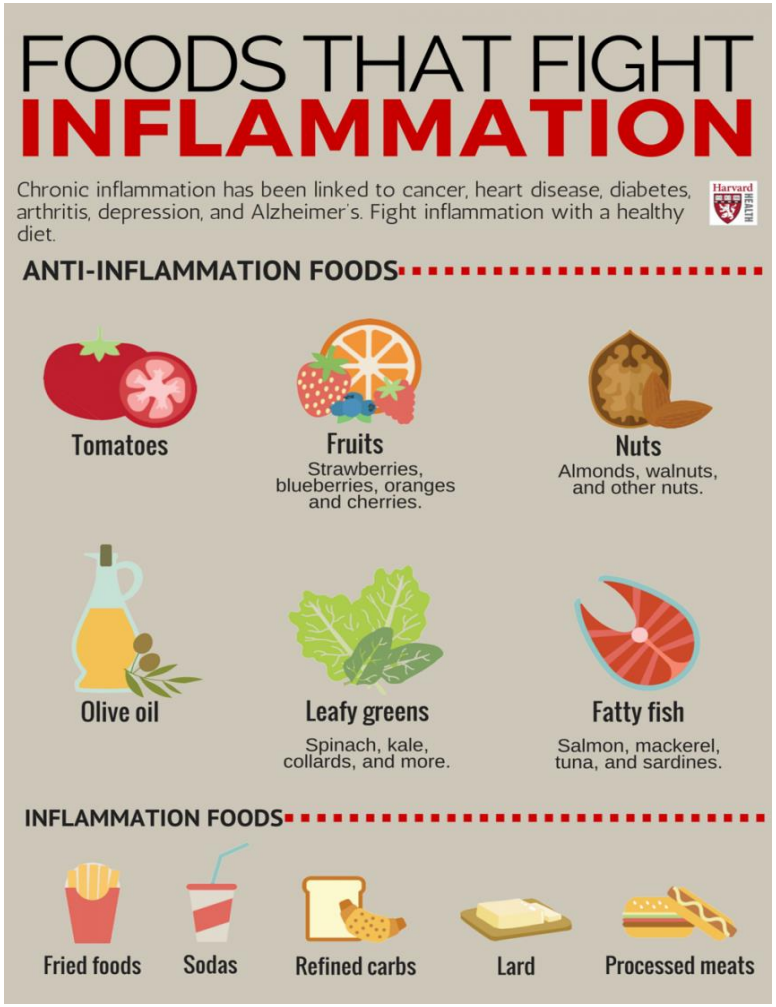
Anti-Inflammatory Foods



Phytochemicals are food compounds that can decrease inflammation in the body by:

- Inhibiting harmful enzyme pathways that are activated during the inflammatory process
- Acting as antioxidants to stop DNA damage of cells and tissues which protects against development of cancer and other chronic diseases
- Positively influencing the immune system

Foods that Fight Inflammation. *Harvard Health Publications* Oct. 26, 2015. Accessed 9/25/2016 from: http://www.health.harvard.edu/staying-healthy/foods-that-fight-inflammation

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Anti-Inflammatory Diet Research

Dietary Polyphenols, Inflammation, and Cancer

Weimin Guo , EunHee Kong & Mohsen Meydani

Page 807-810 | Received 01 May 2009, Accepted 13 Aug 2009, Published online: 10 Nov 2009

Journal
Nutrition and Cancer
Volume 61, 2009 - Issue 6

- Polyphenols (bioactive compounds in some natural foods) are proven to be a major factor in reducing the risk of cancer and preventing different diseases
- Polyphenols act as an antioxidant, anti-aging and anti-inflammatory agent
- High amounts are found in:
  - Fruits (citrus, apples, berries, grapes)
  - Vegetables (high amount in onions)
  - Cocoa products (dark chocolate)
  - Whole grain (Oats)
  - Plant Extracts (green tea, red wine, olive oil, curcumin)

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Additional Anti-Inflammatory Research

Inflammopharmacology
June 2015, Volume 23, Issue 2, pp 79–89

Role of fish oil in human health and possible mechanism to reduce the inflammation

Mohammed S. Ellulu et. al

- Fish oils and certain plant sources decrease inflammation by interfering with harmful metabolic pathways in the body

- Fish oil contains omega-3 fatty acids which improve heart health, brain function, and reduce the risk of cancer
- Plant sources of omega-3 fatty acids are found in walnuts, flaxseed, pumpkin seed, oatmeal, acai (“ah-sah-ee”), and nut oils

Sources of Omega- 3 Fatty Acids

Per 3 oz serving– cooked

	Omega-3 (mg)
• Herring	2300
• Salmon	2300
• Trout	2000
• Mackerel	1571
• Tuna	900
• Halibut	800
• Cod	200

Best choices: wild seafood has higher Omega-3 value than farm raised

The 2010 Dietary Guidelines advise to consume 8 ounces of seafood per week to reach an average intake of 250 mg/d of omega-3 fatty acids EPA and DHA

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Anti-Inflammatory Foods and Lifestyle

More is better:

- Eat more plant-based foods with at least 5-9 servings per day of fruits and vegetables
- Add more whole grain foods
- Eat foods high in omega-3 fatty acids:
  (Ex. wild fish (8 oz/week), walnuts, flax seeds, pumpkin seeds, & soybean oil)
- Choose foods high in anti-oxidants: selenium, vitamin E, Vitamin C
  (found in deeply pigmented fruits and vegetables)
- Exercise daily
  (30 minutes daily is recommended)
- Sleep well and be joyful!

Anti-Inflammatory Foods and Lifestyle

Less is better:

- Reduce foods containing trans-fats
  (hydrogenated vegetable oils found in certain crackers, chips, foods with long shelf-lives)
- Limit processed foods and energy dense foods
  (sugary foods and drinks, high fat foods)
- Avoid overcooking of meats and food: broiling, grilling, frying
  (limit eating of charred foods-glycotoxins)
- Be mindful of how nuts, oils and seeds are stored
  (keep nuts in refrigerator or freezer, keep oils in cool area. Shelf life of oils is about 3 months)
- Limit consumption of red meats (beef, pork, lamb) and avoid processed meats
  (if desire meat, choose grass-fed)
- If alcohol is consumed, limit to 1 drink/day for women and 2 drinks per day for men

Gut Health

The Research

Gastroenterology Research and Practice
Volume 2012 (2012), Article ID 872716, 16 pages
http://dx.doi.org/10.1155/2012/872716

Review Article

Probiotics, Prebiotics, and Synbiotics: Gut and Beyond

Usha Vyas and Natarajan Ranganathan

Available online at www.sciencedirect.com
ScienceDirect
Current Opinion in Biotechnology
ELSEVIER

Impact of microbial transformation of food on health – from fermented foods to fermentation in the gastro-intestinal tract

Johan ET van Hylckama Vlieg[1], Patrick Veiga[1], Chenhong Zhang[2], Muriel Derrien[1] and Liping Zhao[2]

Yogurt, living cultures, and gut health[1–3]

Lorenzo Morelli

The American Journal of Clinical Nutrition

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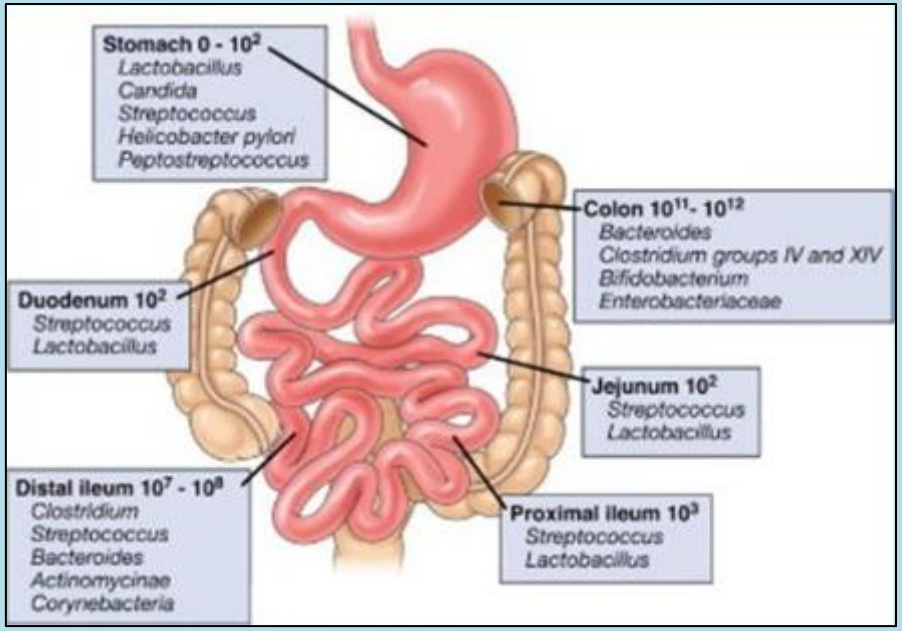
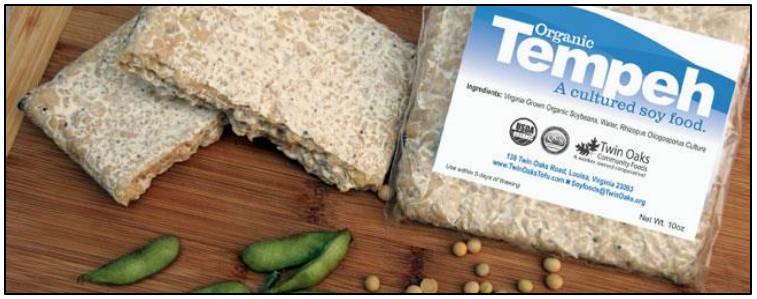
Microbiota and Gut Health



- G.I. Tract contains bacteria species called Microbiota (or "Normal G.I. Flora")
  - Different types of bacteria inhabit different areas of the GI tract. The human gut contains 2 - 3 pounds of bacteria
- Microbiota play a crucial role in human health by preventing disease
- It should be noted that Microbiota can be both good and harmful
  - This explains why we need good bacteria to prevent infections and diseases

How Microbiota Play an Important Role in Our Health

- Help keep the digestive tract healthy so allergens and bacteria cannot cross into the blood stream
- Play a role in the development of healthy cells and tissue
- Help make B vitamins and synthesize amino acids
- Aid in fermentation of non digestible substrates like fibers and mucus
- Bacteria are fermented in the colon where they help absorb fatty acids, salts and water
- Help prevent harmful bacteria from living in our GI tract and support our immune system



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Some Fermented Foods Contain Microbiota and also Improve Gut Health

- Transport Probiotics into the GI tract

- Enhance absorption of food by producing helpful enzymes

- Introduce friendly bacteria into the digestive system

- Friendly bacteria keep illness away

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Summary: Gut Health

- Foods which contain probiotics such as yogurt and kefir will help keep good bacteria in the GI tract
- Venture out and try new fermented foods as they help maintain the natural microbiota system in our gut and help prevent disease

*Note: Use of probiotics and raw, unpasteurized food during active cancer treatment is not recommended as they may cause infection in immunocompromised patients

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