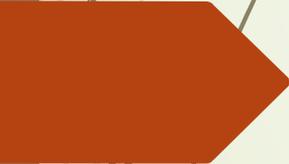


# Optimizing Nutrition for Scleroderma Patients



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# Importance of Nutrition for Optimal Health

- **Nutrition is the single most important factor for optimizing human health**
- There are positive and negative aspects of diet
- GOAL: to optimize the positive while minimizing the negative!
- Malabsorption in scleroderma can cause increased risk of deficiency in vitamins and minerals
  - Higher intake may be needed!

# Inflammation

- Dietary choices can *contribute to* inflammation (or *prevent* inflammation)
- Pro-inflammatory dietary choices:
  - High sugar diet
  - Diet high in processed foods
  - Diet high in saturated and trans fats
  - Diet low in fruits and vegetables
- Anti-inflammatory dietary choices:
  - Diet high in omega-3 fatty acids (fish!)
  - Diet which contains herbs, spices, garlic and ginger
  - Avoidance of chemicals, including, pesticides, herbicides and food additives

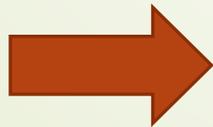


# Dietary components of consideration

- Macronutrients: protein, fat & carbohydrates
  - Omega-3 fatty acids versus omega-6 fatty acids
  - Fruits and vegetables versus simple processed carbs
    - Fiber
    - Grains
- Micronutrients: vitamins, minerals
- Water
- **Negative dietary exposures**
  - Food additives, mercury, lead, aluminum, pesticides, herbicides

# Need for Specific Diets?

- Anti-inflammatory Diet
- Presence of food allergies/intolerances?
- Gluten-Free Diet
- Lactose/Dairy Free
- Signs of malnutrition or malabsorption??



# Macronutrients



- ▶ We need adequate protein, fat and carbohydrates in our diet (for optimal health none should be excluded!)
- ▶ We need to optimize choices for each category
- ▶ Combining foods from each of these groups is best for maintaining normal blood sugar levels
  - ▶ High blood sugar increases inflammation

# Protein

- Fish, lean meat, chicken/turkey, eggs
  - Beans, lentils (Consider Digestibility)
- For animal foods, always consider what the animal ate!
- Examples:
  - Grass-fed beef versus grain-fed beef
  - Wild caught salmon versus farmed salmon



# Carbohydrates

- Dietary Carbohydrates ranked from most important to least important
  - Vegetables (cooking may be better)
  - Fruits
  - Beans/lentils (digestibility?)
  - Whole Grains (brown basmati rice, wild rice, buckwheat (no gluten), quinoa, etc.)
  - Limit white flour and sugar
  - AVOID artificial sweeteners



# Gluten Intolerance

- Rates of **celiac disease, gluten intolerance and wheat allergy** are all rising
  - Higher rates of celiac disease in scleroderma patients – also autoimmune
- Gluten intolerance can cause wide ranging inflammation throughout the body & can cause malabsorption of nutrients
- **Gluten is found in wheat, rye and barley**
  - Oats can also be contaminated with gluten from processing facilities
  - Some people find avoidance of all grains to be beneficial



# Grains

- ▶ What does the typical American diet look like?
  - ▶ Very high in wheat (and therefore gluten)!!
- ▶ Examples: cereal, bagels, donuts, pastries, muffins, pancakes, waffles, bread, pizza, pasta, pretzels, crackers, cakes, cookies
- ▶ Wheat allergy >> gastric reflux



# Gluten-Free Diet

- What does a gluten-free diet look like?
  - Ideally, focus should be on other starchy foods like yams, potatoes, brown or wild rice, quinoa, beans and lentils



# What about gluten-free products?

- Caution with gluten-free products as these tend to contain food additives to make the product more attractive (and many are lacking nutrients which your body needs!)





# Fiber

- Fiber is very important for gut health
  - Consume from food, not supplements
  - Consume with water! (e.g. vegetables)
  - Serves as food for good bacteria (microbiota) in your gut = **prebiotic**
  - Good bacteria in gut produce very important short chain fatty acids
  - Best sources: vegetables, whole fruits, beans, lentils, nuts and seeds, and whole grains (can be gluten-free grains, like wild rice, etc.)
  - Consider digestibility
- 

# Water



- Very important to consume adequate water every day!
- Goal = 8 glasses of water per day
- Inadequate water intake can cause constipation, can impair bodily functions, reduce lubrication of joints
- Can also affect skin elasticity and kidney function
- If you currently consume soda, the #1 most important thing you can do for your health is to replace soda with water!
- Add lemon!

# What about dairy??

- Lactose intolerance can be caused by GI issues
  - Fermented and whole-milk products are lower in lactose
- Should be from grass-fed cows!
  - Better fatty acid profile
  - No added hormones and antibiotics
- **Probiotics** (=good bacteria), found in fermented foods, help protect the GI tract
  - Yogurt
  - Kefir
  - Butter, sour cream (look for probiotics on label)
  - Other fermented foods: pickles, kombucha



## STORE-BOUGHT PROBIOTICS





# Fatty Acids

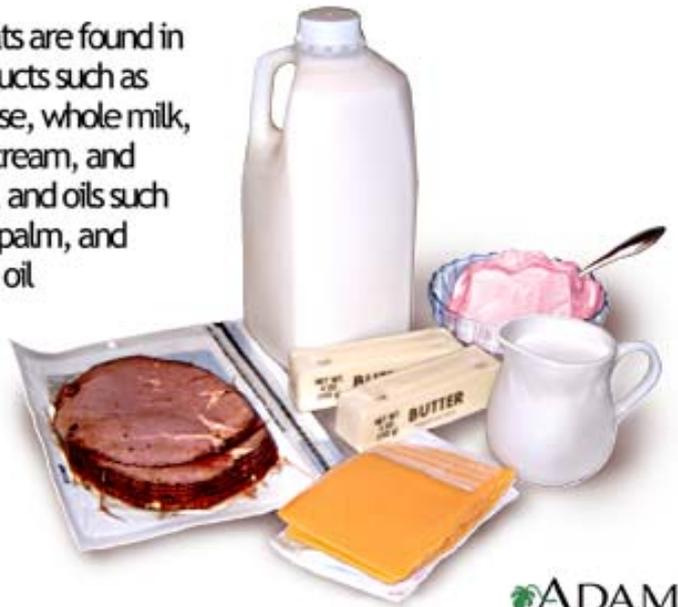
- Types of fatty acids in diet:
    - Trans (man-made) – avoid!
    - Saturated
    - Monounsaturated
    - Polyunsaturated
      - Includes omega-6 and omega-3 fatty acids
- 

# Saturated Fat

- ▶ High saturated fat intake has been associated with increased inflammation

## Saturated fats

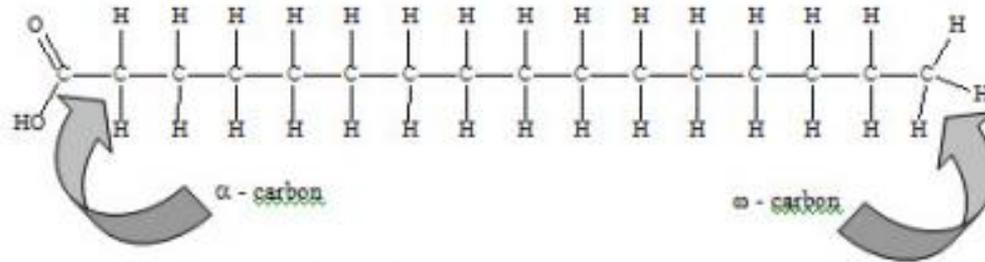
Saturated fats are found in animal products such as butter, cheese, whole milk, ice cream, cream, and fatty meats, and oils such as coconut, palm, and palm kernel oil



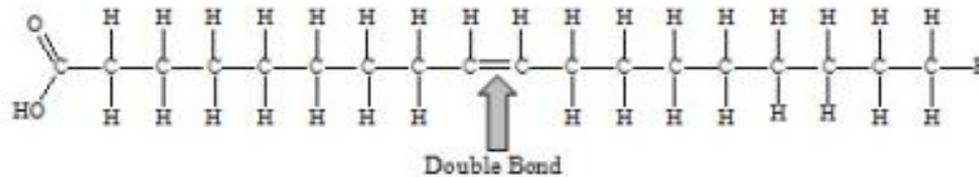
ADAM.



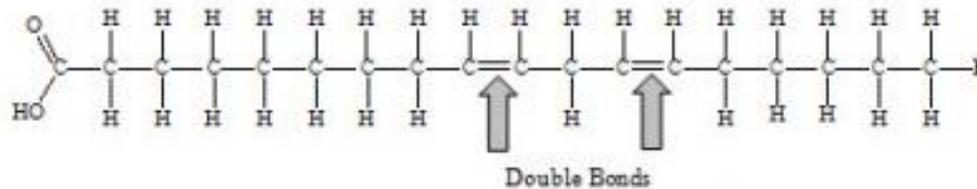
# What is an Omega-3 Fatty Acid?



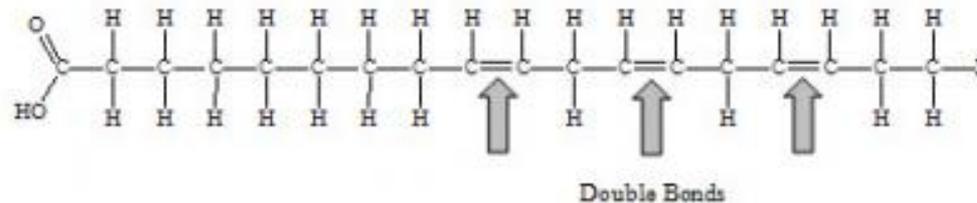
A. 16:0 Saturated Fatty Acid (Palmitic Acid)



B. 18:1  $\omega$ -9 Monounsaturated Fatty Acid (Oleic Acid)



C. 18:2  $\omega$ -6 Polyunsaturated Fatty Acid (Linoleic acid)



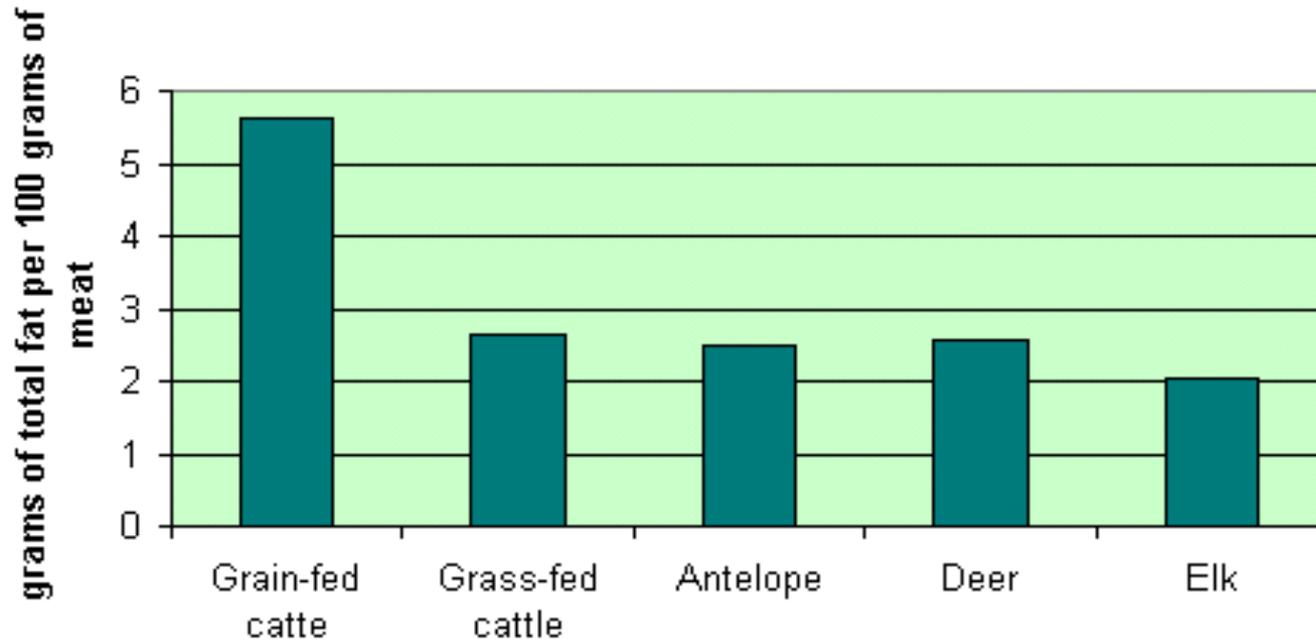
D. 18:3  $\omega$ -3 Polyunsaturated Fatty Acid (Linolenic Acid)

# History of Omega-3 FAs



- ▶ Prior to the Agricultural Revolution
  - ▶ Humans consumed mostly lean meat, fish, green leafy vegetables, fruits, nuts, berries, honey
  - ▶ The omega-6 : omega-3 ratio was ~ **1:1**
- ▶ Last 100 years – huge shift in agricultural practices
  - ▶ Increased grain production
  - ▶ Extraction of oilseeds
  - ▶ Grain feeding animals (including farm raised fish!)
  - ▶ **Current** omega-6 : omega-3 ratio is ~ **17:1**
  - ▶ **This increases inflammation**

## Grassfed Beef is Similar to Wild Game in Total Fat



G.J. Miller, "Lipids in Wild Ruminant Animals and Steers." J. of Food Quality, 9:331-343, 1986.



<b>FISH 100-GRAM SERVING*</b>	<b>FAT PER SERVING GRAMS</b>	<b>PERCENT TOTAL FAT THAT'S OMEGA-3</b>	<b>TOTAL CALORIES</b>
<b>WILD ATLANTIC SALMON</b>	<b>6.34</b>	<b>27%</b>	<b>142</b>
<b>WILD COHO SALMON</b>	<b>5.93</b>	<b>22</b>	<b>146</b>
<b>WILD TROUT</b>	<b>3.46</b>	<b>20</b>	<b>119</b>
<b>WILD CATFISH</b>	<b>2.82</b>	<b>19</b>	<b>95</b>
<b>FARMED TROUT</b>	<b>5.40</b>	<b>17</b>	<b>138</b>
<b>FARMED ATLANTIC SALMON</b>	<b>10.85</b>	<b>17</b>	<b>183</b>
<b>FARMED COHO SALMON</b>	<b>7.67</b>	<b>16</b>	<b>160</b>
<b>FARMED CATFISH</b>	<b>7.59</b>	<b>5</b>	<b>135</b>

\*approximately 3 ounces

Data: USDA Nutrient Database

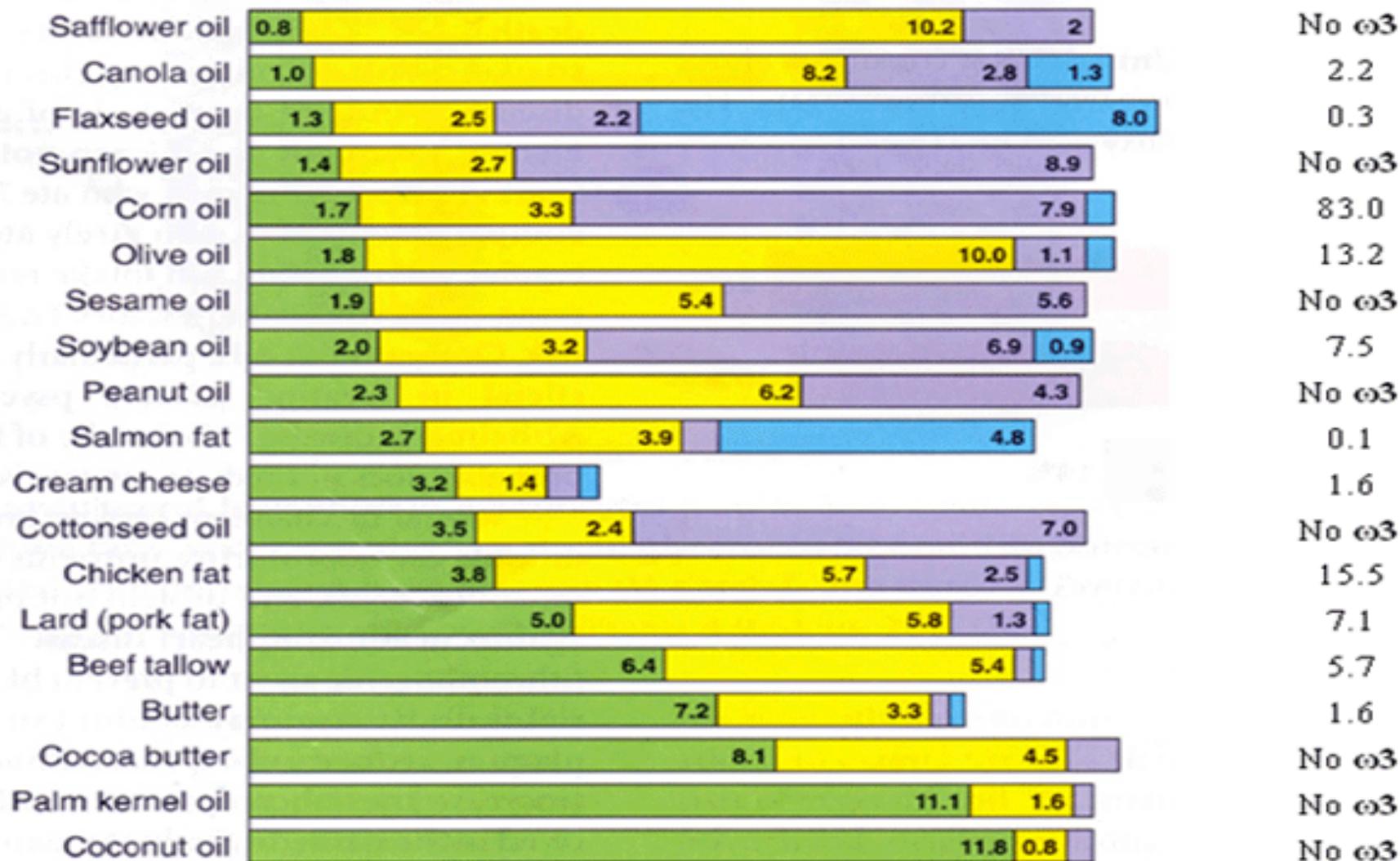


Wild Alaskan vs farmed salmon - taste test  
[www.AHappyHealthyMommy.com](http://www.AHappyHealthyMommy.com)

# Fatty Acid Content (grams per tablespoon)

$\omega$ -6:  $\omega$ -3 ratio

Sources of Dietary Lipid



■ Saturated   
 ■ Monounsaturated

**Polyunsaturated:**

■ Omega-6   
 ■ Omega-3



# Summary of Best Sources of Macronutrients

- ▶ Protein: Wild caught Fish! And grass-fed beef, organic poultry, eggs high in omega-3s, beans, lentils and nuts
- ▶ Fat: Eat more foods high in omega-3 fatty acids like fish, flaxseed oil, walnuts (and walnut oil), canola oil, and eggs which are high in omega-3s
- ▶ Carbohydrates: Vegetables (especially green leafy vegetables, colorful fresh veggies like bell peppers and carrots, and cooked veggies like pumpkin, squash, and yams; fresh whole fruits; beans/lentils, & some gluten-free whole grains

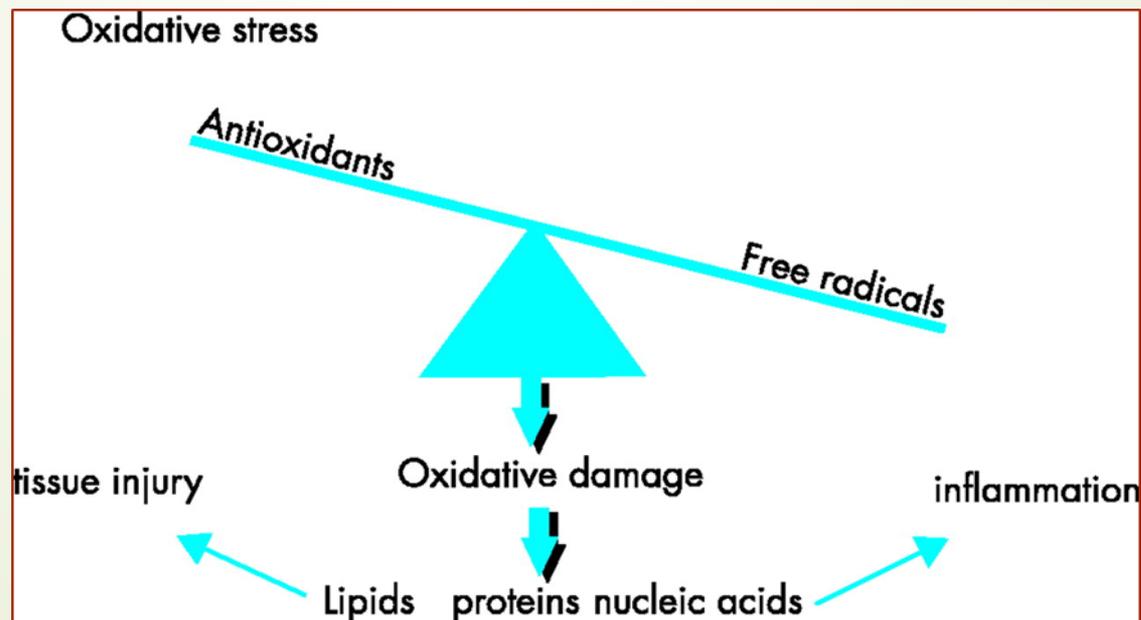


# Micronutrients

- Micronutrients include **vitamins and minerals**
- Always best to consume these through food rather than supplements (though supplements may be necessary!)
- If using a supplement, look for one without super high amounts of nutrients and with few additives
- I would recommend avoiding supplemental calcium
  - Could support calcification of tissues

# Antioxidants

- Oxidative stress can lead to increased inflammation in the body
- Our body fights oxidative stress by using antioxidants found in the diet
- Two very important antioxidants: Vitamins C & E



# Vitamin C

- Synthesized in all green plants
- Potent antioxidant
  - Protects against oxidative stress
- Important for cartilage formation & immune function, improves endothelial function & lowers BP
- Needed for collagen formation – thus may be used up more readily in scleroderma patients



Parsley

# Vitamin E

- Important antioxidant
- Has the ability to protect fatty acids from oxidation (i.e. functions in different areas than vitamin C)



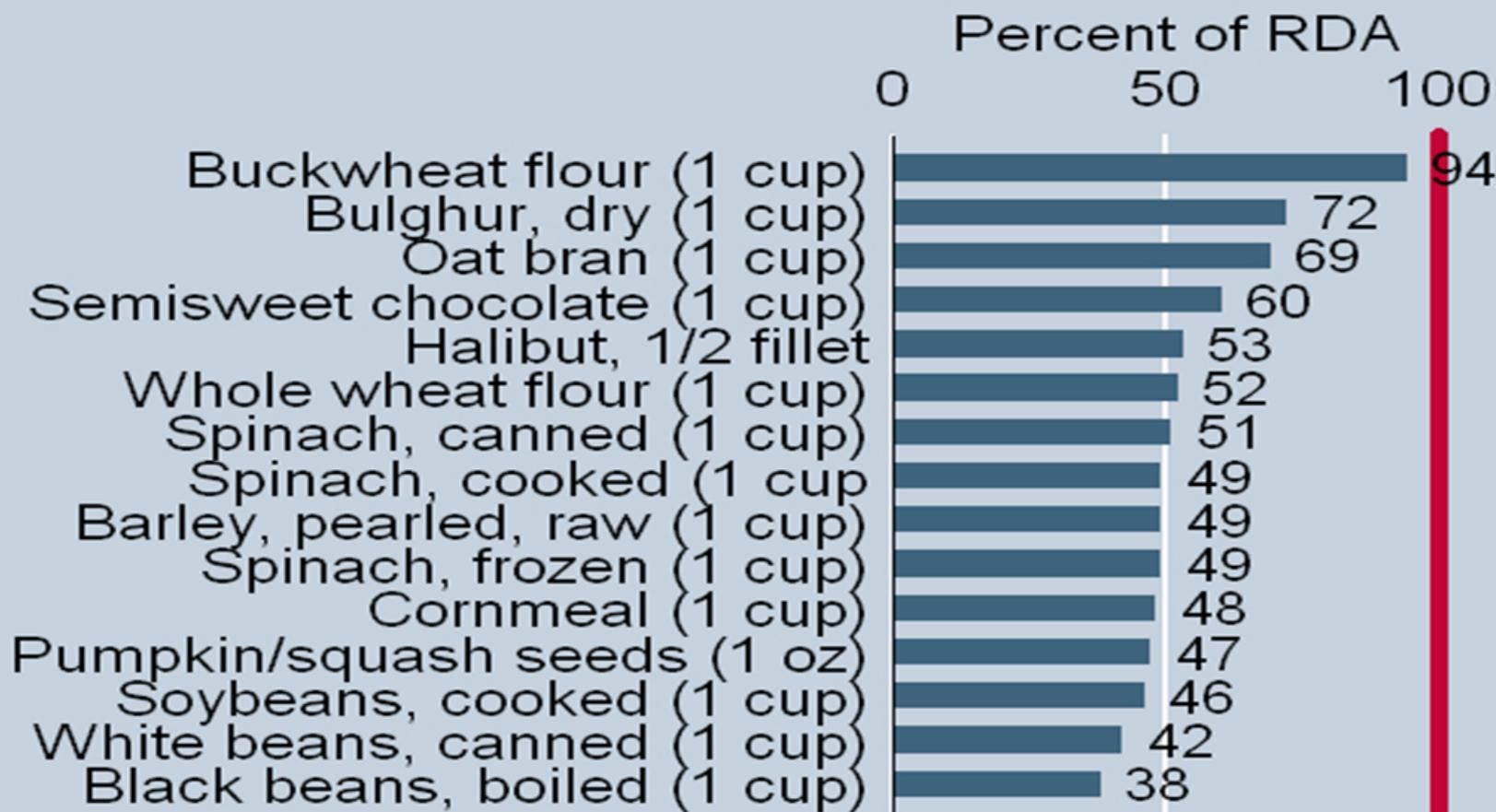
# Magnesium

- Extremely important mineral!
- 50% of the population does not meet the RDA of 420 mg
- May be lost from GI tract in GI disorders
- Stress can alter magnesium levels
- Deficiency causes constipation, neuromuscular excitability (and cramping), high blood pressure, dizziness, seizures, tachycardia
- May also help Raynaud's



# Food Sources of Magnesium

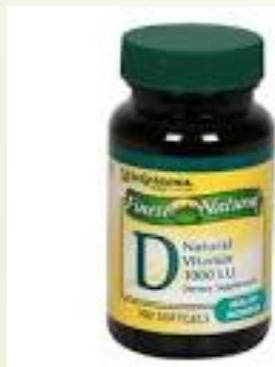
Common measures  
of highest magnesium foods



# Vitamin D



- Synthesized from cholesterol in the skin from UV rays
  - Inhibited by cholesterol lowering meds
  - Also inhibited by older age, northern latitude, season, sunscreen, clothing, dark skin, obesity
- Vitamin D deficiency in mothers has been linked to increased risk of autoimmune diseases in offspring
- Important for calcium regulation, immune function, serotonin synthesis
- Also reduces inflammation!



vs.



# Herbs and Spices

- GARLIC – very important addition to the diet!
- Turmeric and ginger are powerful, natural anti-inflammatory agents
- Chili peppers
- Curry powder
- Cinnamon
- Oregano, basil, thyme and rosemary
- Teas can be helpful as well





# Try to Avoid Food Additives

- Food Labels – read ingredient lists!
  - These should be short, easy to read, and items you could buy and use to make food
    - Ex – Can you buy ‘natural flavor’ or ‘seasoning’?
  - Carrageenan – highly inflammatory!!!
    - Found in milk and milk-like products



# Avoid Pesticides & Herbicides

Buy Organic as much as possible!

## DIRTY DOZEN PLUS 2013

14 FOODS TO ALWAYS BUY ORGANIC



APPLES



CELERY



CHERRY TOMATOES



CUCUMBERS



GRAPES



HOT PEPPERS



NECTARINES



PEACHES



POTATOES



SPINACH



STRAWBERRIES



SWEET BELL PEPPERS



KALE



COLLARD GREENS





# So What Does an Anti-Inflammatory Diet Look Like?

- Very high in vegetables and fruit (high in antioxidants)
  - Specifically, high in green leafy vegetables, peppers (bell and hot peppers), and citrus fruit
- Contains fish (especially wild salmon) – (high in omega-3 fatty acids)
- Contains garlic, ginger & broad use of spices/herbs (especially turmeric)
- Inclusion of nuts and seeds
- Very low in sugar & food additives
- No gluten
  - Use of potatoes (with skin), yams, brown/wild rice, quinoa, buckwheat, beans, lentils

# Mediterranean Diet



Chickpeas (canned)

Yellow split peas



Green split peas



Lima beans (canned)



Brown lentils



Pistachio nuts



Walnuts



Dried figs



Pine nuts



Almonds



Dried apricots

# QUESTIONS?

