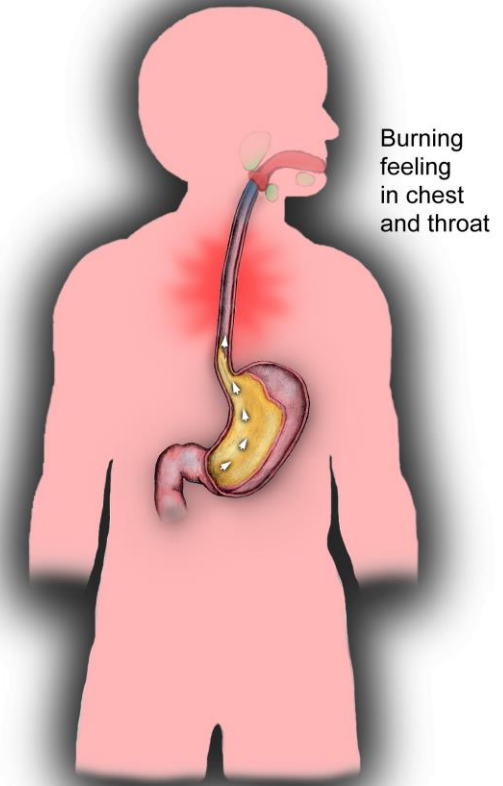
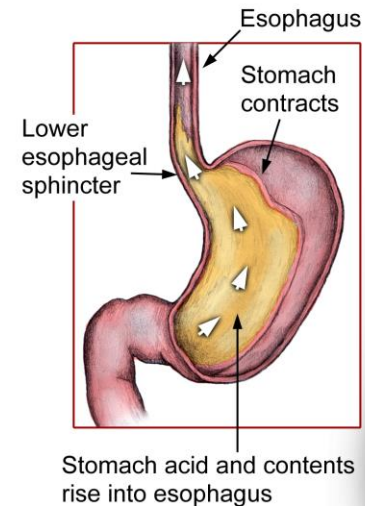


Nutrition and Immunity

Randy Pendergrass LSN, CSCS, LMT
randycscs@gmail.com

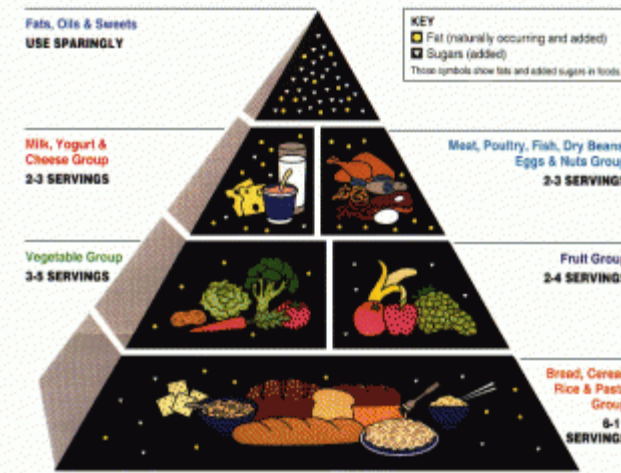
Myth# 11 :Acid reflux is caused by too much acid

- Acid reflux is primarily caused by a faulty LES (lower esophageal sphincter)
- Intra-abdominal pressure can create pressure on stomach forcing LES to not close properly
- Low stomach acid can cause food to sit in stomach too long combined with an over growth of bacteria can lead to fermentation
- Overgrowth of bacteria too far up the GI tract

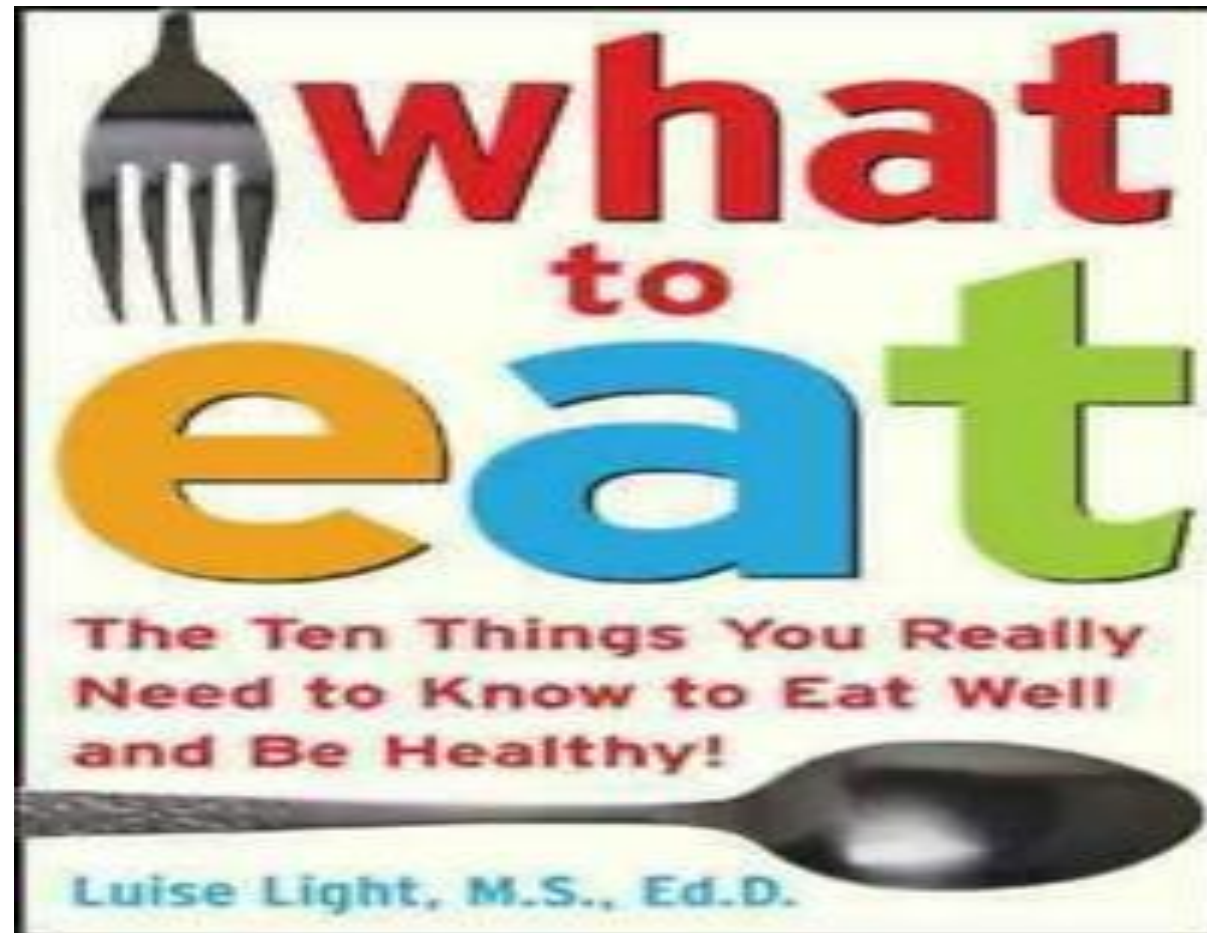


Myth #10: The USDA's Food Guide Pyramid Was Created To Promote Good Health

- Luise Light RD., was asked by the USDA to create a new healthy eating plan to replace the Four Basic Food Groups in the late 1970's.
- Her original pyramid had fruits and vegetables as the base (5-9 servings), with grains and sugars at the top (2-3 servings).
- She has stated that her original pyramid was changed to curb the cost of the food stamp program. *(Also the USDA has to try and please too many people)*
- The Food Guide Pyramid was released in 1992.
- As Luise predicted obesity and diabetes rates have skyrocketed since its inception.



Book by Luise Light



MYTH #1: Dietary Cholesterol is Harmful

- [Scientific Report of the 2015 Dietary Guidelines Advisory Committee:](#)
"Previously, the Dietary Guidelines for Americans recommended that cholesterol intake be limited to no more than 300 mg/day. The 2015 DGAC will not bring forward this recommendation because available evidence shows no appreciable relationship between consumption of dietary cholesterol and serum (blood) cholesterol, consistent with the AHA/ACC (American Heart Association / American College of Cardiology) report.
Cholesterol is not a nutrient of concern for overconsumption."



Journal of American College of Cardiology

Saturated Fats and Health: A Reassessment and Proposal for Food Based Recommendations

2020 August, 76 (7) pages 844-857

- The recommendation to limit dietary saturated fatty acid (SFA) intake has persisted despite mounting evidence to the contrary. Most recent meta-analyses of randomized trials and observational studies found no beneficial effects of reducing SFA intake on cardiovascular disease (CVD) and total mortality, and instead found protective effects against stroke. **Although SFAs increase low-density lipoprotein (LDL) cholesterol, in most individuals, this is not due to increasing levels of small, dense LDL particles, but rather larger LDL particles, which are much less strongly related to CVD risk.** It is also apparent that the health effects of foods cannot be predicted by their content in any nutrient group without considering the overall macronutrient distribution. Whole-fat dairy, unprocessed meat, and dark chocolate are SFA-rich foods with a complex matrix that are not associated with increased risk of CVD. **The totality of available evidence does not support further limiting the intake of such foods.**

Main Causes of Disease

- Metabolic Dysfunction caused primarily by:

- *Micronutrient deficiency caused by low quality processed foods, poor farming techniques, inadequate dietary guidelines, etc.

- *Toxicity caused by low quality processed food, pollutants, overworked undernourished detoxification organs, lack of movement, poor sleep, stress, etc.

~70 of what Americans eat is processed food consisting of the same base ingredients: vegetable (grain and seed) oils, refined sweeteners, refined flour, artificial colors and flavors, preservatives.

~40 Essential Metabolic Nutrients That Run Your Metabolism

Vitamins

- Biotin
- Vitamin B1-Thiamin
- Vitamin B2- Riboflavin
- Vitamin B3- Niacin
- Vitamin B4- Choline
- Vitamin B5- Pantothenate
- Vitamin B6- Pyrodoxine
- Vitamin B9- Folate
- Vitamin B12- Cobalamin
- Vitamin A
- Vitamin D
- Vitamin E
- Vitamin K
- Vitamin C

Minerals

- Calcium
- Chloride
- Chromium
- Cobalt
- Copper
- Iodine
- Iron
- Magnesium
- Manganese
- Molybdenum
- Phosphorus
- Potassium
- Selenium
- Sodium
- Zinc

~40 Essential Metabolic Nutrients

Amino Acids(Proteins)

- Leucine
- Isoleucine
- Valine
- Methionine
- Threonine
- Tryptophan
- Phenylalanine
- Lysine

Fatty Acids

- Omega 3 fat- alpha linolenic acid
- Omega 6 fat- linoleic acid

These fats should make up no more than 1-2% of total calories and should come from whole food sources

Prolonging Healthy Aging: Longevity Vitamins and Proteins
Proceedings National Academy of Sciences
October 2018 23;115(43): pages 10836-10844
Bruce Ames

- I also propose that nutrients required for the function of longevity proteins constitute a class of vitamins that are here named "**longevity vitamins.**" I suggest that many such nutrients play a dual role for both survival and longevity. The evidence for classifying taurine as a conditional vitamin, and **the following 10 compounds as putative longevity vitamins, is reviewed: the fungal antioxidant ergothioneine; the bacterial metabolites pyrroloquinoline quinone (PQQ) and queuine; and the plant antioxidant carotenoids lutein, zeaxanthin, lycopene, α - and β -carotene, β -cryptoxanthin, and the marine carotenoid astaxanthin.** Because nutrient deficiencies are highly prevalent in the United States (and elsewhere), appropriate supplementation and/or an improved diet could reduce much of the consequent risk of chronic disease and premature aging.

Foods, Fortificants, & Supplements

Where Do Americans Get Their Nutrients

Journal of Nutrition 2011 Oct.; 141(10)

<u>Nutrient</u>	<u>% < EAR</u>
Calcium	35%
Magnesium	45%
Zinc	8%
Vitamin A	34%
Vitamin C	25%
Vitamin D	70%
Vitamin E	60%
Vitamin K	35%
Omega 3 fats	High

7 Important Nutrients for Immune Health

Vitamin D (Hormone D)

- Sunlight (UVB rays)
- Foods- liver, egg yolks, butter, fatty fish
- Involved in over 1000 gene proteins
- Bone health (calcium placement)
- Neurotransmitters: serotonin
- Influence immune antimicrobial peptides
- Studies show viral and cancer incidence higher in northern climates
- Check lab- 50ng/mL
- If supplementing use D3 not D2
- Balance with A and K2

Vitamin A

- Retinol (retina)
- Beta carotene is not vitamin A
- “Anti-infective” vitamin
- Critical to the formation and function of the epithelium
- Regulates T cell mediated and antibody immune response
- Liver, cod liver oil, butter, cheese

Role of Vitamin A in the Immune System

- Vitamin A (VitA) is a micronutrient that is crucial for maintaining vision, promoting growth and development, and protecting epithelium and mucus integrity in the body. VitA is known as an anti-inflammation vitamin because of its critical role in enhancing immune function. VitA is involved in the development of the immune system and plays regulatory roles in cellular immune responses and humoral immune processes. VitA has demonstrated a therapeutic effect in the treatment of various infectious diseases.
- Research has shown that crucial immune organs need constant dietary intake to maintain VitA concentrations
- VitA has both promoting and regulatory roles in both the innate immune system and adaptive immunity; therefore, it can enhance the organism's immune function and provide an enhanced defense against multiple infectious diseases.

7 Important Nutrients for Immune Health

Magnesium

- Relaxing mineral
- In the chlorophyll molecule of green plants, shellfish, bone broths, and some mineral waters (Gerolsteiner)
- Involved in 400-1000 enzymes
- Works closely with calcium
- Magnesium is very important to the production and function of insulin
- Very common deficiency due to industrial farming

Zinc

- Involved in ~2,000 enzymes
- Involved in Inhibiting replication of viruses
- Involved in production of Superoxide dismutase (antioxidant)
- Regulates T cells (immune cells)
- Works closely with copper
- Testosterone production
- Oysters, red meat, dairy
- Absorption inhibited by phytates in grains, seeds, beans, and nuts

7 Important Nutrients for Immune Health

Iodine

- Thyroid hormones
- Enhances white blood cell activity
- Potent antimicrobial agent
- High concentrations in breast and prostate
- Seafood

Selenium

- Antioxidant and immune stimulator
- Protects thyroid from toxins like goitrogens
- Deiodinase enzymes- convert T4-T3
- Strengthens white blood cells
- Selenoproteins protects against mercury toxicity
- Most fish have more selenium than mercury (excluding shark, swordfish, mackerel)
- Seafood and Brazil nuts are best source
- Selenium is an antioxidant, so it is best to get nuts in shell

- **Protective effects of selenium against mercury toxicity have been demonstrated in all animal models evaluated.** As interactions between selenium and mercury and their molar ratios in seafood are essential factors in evaluating risks associated with dietary mercury exposure, considering mercury content alone is inadequate. In this study, the absolute and molar concentrations of mercury and selenium were determined in edible portions from 420 individual fish representing 15 species of pelagic fish collected from the central North Pacific Ocean near Hawaii. With a Se/Hg molar ratio of less than 1, mako shark was the only fish containing a net molar excess of mercury. A selenium health benefit value based on the absolute amounts and relative proportions of selenium and mercury in seafood is proposed as a more comprehensive seafood safety criterion.

7 Important Nutrients for Immune Health

Vitamin C

- Humans, other primates, guinea pigs, and a few other species do not make internally
- Linus Pauling made popular in the 1970's
- Collagen formation
- Carnitine formation (fat metabolism)
- Antioxidant
- Adrenal hormones
- Glutathione (antioxidant)
- Cell uptake inhibited by sugar
- Red and yellow peppers, kiwi, strawberries, broccoli, lemons, limes

Linus Pauling



Toxicity: The dose makes the poison.

Natural

- Arsenic, mercury, lead
- Talc (talcum powder)
- Grain and seed oils (4-HNE)
- Castor beans (ricin)
- Peanuts (aflatoxins)
- Red kidney beans (phytohaemagglutinin)
- Gluten
- Wheat germ agglutinin
- Lectins

Grains and Beans (legumes) have the highest levels of naturally occurring toxins in the food supply. They are also the most common allergens. This is why our ancestors utilized preparation methods like sprouting, fermenting, culturing, and soaking to minimize exposure.

Synthetic

- Carbon tetrachloride (refrigerant)
- Pesticides
- Hexane (solvent used to extract oils out of plants)
- NSAID's
 - acetaminophen
 - ibuprofen
- Perfluorooctanoic acid:
 - Non stick cookware
- Plastic residues:
 - Bisphenol a
 - Phthalate

Autoimmune Diseases

- ~80 different autoimmune diseases identified so far: Crohn's, Rheumatoid Arthritis, lupus, MS, Hashimoto's, Sjogren's, Celiac, etc.
- Over-reactive immune system
- Genetic link
- Environmental triggers include:
 - gut issues including intestinal permeability
 - Toxins: heavy metals, synthetic chemicals
 - Gluten and other food allergies/insensitivities
 - Infections- lyme, Epstein-barr, cytomegalovirus
 - Mitochondrial and cell membrane dysfunction
 - Too little sleep/too much stress

Common denominator: Inflammation

International Journal of Celiac Disease

Volume 5, 2017 - Issue 4

Are Non-Celiac Autoimmune Diseases Responsive to Gluten-Free Diet?

ABSTRACT

Genetic risk factors for autoimmune diseases are constantly discovered, however, environmental factors are lagging behind and the precipitating events leading to development of autoimmune diseases remain enigmatic. Gluten is a well-established inducing nutrient in celiac disease and gluten withdrawal is the only current effective therapy. **More and more studies have shown that non-celiac autoimmune diseases can partially respond to gluten free diet.** The present editorial reviews those conditions and suggest multiple potential mechanisms that might operate in clinical amelioration of non-celiac autoimmune diseases.

Nutrition Review

2017 Dec 1;75(12): pp.1046-1058

Adverse effects of gluten ingestion and advantages of gluten withdrawal in nonceliac autoimmune disease

- **Abstract**

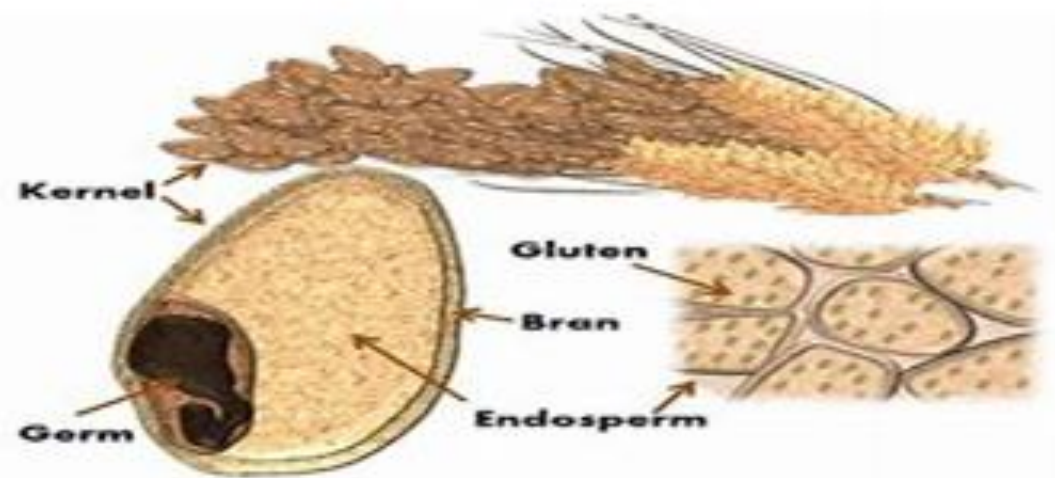
- In light of the coincident surge in overall gluten intake and the incidence of autoimmune diseases, the possible biological adverse effects of gluten were explored. Multiple detrimental aspects of gluten affect human health, including gluten-dependent digestive and extradigestive manifestations mediated by potentially immunological or toxic reactions that induce gastrointestinal inadequacy. **Gluten affects the microbiome and increases intestinal permeability. It boosts oxidative stress and affects epigenetic behavior. It is also immunogenic, cytotoxic, and proinflammatory.** Gluten intake increases apoptosis and decreases cell viability and differentiation. In certain nonceliac autoimmune diseases, gluten-free diets may help curtail the adverse effects of gluten. Additional in vivo studies are needed to unravel the puzzle of gluten effects in humans and to explore the potential beneficial effects of gluten-free diets in autoimmune diseases.

Medications Deplete Nutrients

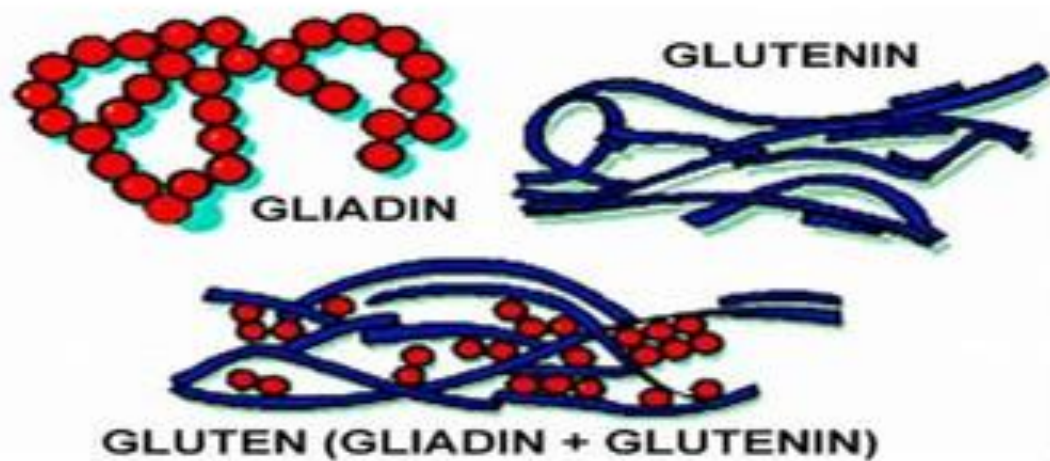
- Statins- Vitamins D, K2, CoQ10
- Steroids- calcium
- H-2 blockers(acid)- K2, D, calcium, iron, zinc, folate, B12
- Metformin- folate, calcium, magnesium, B12, chromium
- NSAID's- folate, iron
- Diuretics- calcium, magnesium, potassium



What is Gluten?



The Gluten protein is mainly found in the endosperm of grain Kernel (seed)



Where is Gluten?



- **Barley**
- **Rye**
- **Oat**
- **Wheat**

Is Wheat (Gluten) Bad?

- Depends on the person (health, genetics)
- What kind of wheat (emmer, einkorn, dwarf, etc.)
- How was the wheat grown and harvested (monoculture)
- How was the wheat prepared



Zonulin, regulation of tight junctions, and autoimmune diseases

Ann. NY Acad. Science 2012 July; 1258(1): pp25-33

- Our discovery of zonulin, the only known physiologic modulator of intercellular TJ (tight junction) described so far, increased understanding of the intricate mechanisms that regulate the intestinal epithelial paracellular pathway and led us appreciate that its up-regulation in genetically susceptible individuals leads to autoimmune diseases.
- Collectively, autoimmune diseases are highly prevalent in the U.S., affecting between 14.7 and 23.5 million people — up to 8 percent of the population
- **Stimuli that cause zonulin release in the gut** - Among the several potential intestinal luminal stimuli that can trigger zonulin release, we identified small intestinal exposure to bacteria and gluten as the two more powerful triggers

Anti-nutrients in Grains



- Phytates
- Enzyme inhibitors
- Gluten or other hard to digest proteins
- Lectins:

Wheat germ agglutinin (WGA)

1. Why Is Wheat (Gluten) a Problem Now?

Hybridization: Scientist Norman Borlaug creates semi-dwarf wheat in 1960's. Semi-dwarf wheat has a shorter thicker stalk to support a larger seed head needed for higher yields. This increased the gluten content over older varieties of wheat.



2. Why is Wheat (Gluten) a Problem Now?

Modern Processing: Used to be stone grinding the grain, soaking, and fermenting has been replaced by high temperature drying, chemical extraction, added preservatives, added synthetic vitamins and minerals, and added refined ingredients.



3. Why is Wheat (Gluten) a Problem Now?

Preparation: Our ancestors would use a sour culture to ferment the grains when making bread. This process would require up to 5 days to make a loaf. It allowed the natural microbes in the culture to pre-digest the grains reducing the anti-nutrients and increasing the nutrients.



4. Why is Wheat (Gluten) a Problem Now?

Quantity in production and consumption. What used to make up a small part of the diet in the form of bread has become a staple in our diet and our skin care products.



5. Why is Wheat (Gluten) a Problem Now?

Humans are suffering from a wide array of gut problems: acid reflux, IBS, gall bladder disease, SIBO, Celiac, Crohn's. A weakened gut has less tolerance for durable food proteins.



Differences in the End Product

Ezekiel 4:9® Sesame Sprouted Grain Bread

100% Flourless, Complete Protein

Item #123

Serving Size: 1 Slice (34g)

Potassium: 75mg

Calories: 80

Carbohydrates: 14g

Total Fat: 0.5g

Dietary Fiber: 3g

Cholesterol: 0mg

Protein: 4g

Sodium: 80mg

Net Wt: 24 oz (680g)

INGREDIENTS: Organic Sprouted Wheat, Filtered Water, Organic Sprouted Barley, Organic Sprouted Millet, Malted Barley, Organic Sprouted Lentils, Organic Sprouted Soybeans, Organic Sprouted Spelt, Fresh Yeast, Organic Wheat Gluten, Sea Salt. Rolled in Organic Unhulled Sesame Seeds.

Sara Lee 100% Whole Wheat

Whole Wheat Flour, Water, **High Fructose Corn Syrup**, Wheat Gluten, Sugar, Yeast. Contains 2% or less of each of the following: Soybean Oil, Calcium Sulfate, Salt, Dough Conditioners (May Contain One or More of the Following: Mono- and Diglycerides, Ethoxylated Mono-and Diglycerides, Sodium Stearoyl Lactylate, Calcium Peroxide, Datem, Ascorbic Acid, Azodicarbonamide, Enzymes), Wheat Bran, Guar Gum, Distilled Vinegar, Calcium Propionate (Preservative), Yeast Nutrients (Monocalcium Phosphate, Calcium Phosphate, Ammonium Phosphate), Corn Starch, Vitamin D3, Soy Lecithin, Milk, Soy Flour.



Who Should Be Careful With Gluten?

- Celiac Disease
- Autoimmune Diseases (Lupus, MS, RA, Crohn's, etc)
- Thyroid Issues (Grave's, Hashimoto's, hypo/hyper)
- Gut issues
- Allergies, especially known food allergies

** Testing for non-celiac gluten sensitivity is incomplete at this time. The best way to determine sensitivity is elimination for 6-8 weeks and check results.*

Where is Gluten?



- Breads, cereals, crackers, pretzels, pastas
- Most processed foods as a thickener, stabilizer, etc.
- Skin/ hair care products: lotions, shampoo, etc
- Medications: Ambien, Fosamax
- Supplements

Caution with Gluten Free Products



- Higher in carbohydrates
- Replaced with gums: guar gum, gellan gum, etc
- Added oils

**Look at the ingredients*