

Celiac Disease and Nutrition

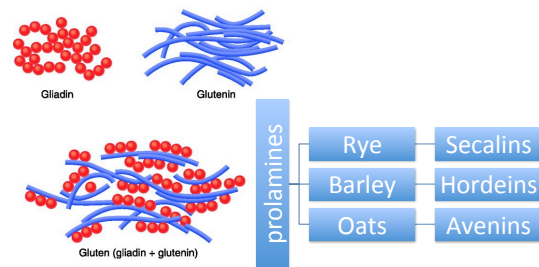


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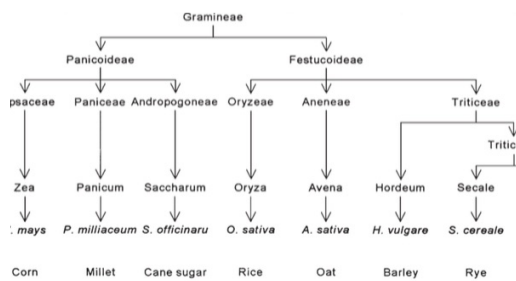
What is Celiac Disease

- **DEFINITION**
 - Celiac disease is a chronic autoimmune disease characterized by malabsorption and diarrhea precipitated by ingestion of food products containing gluten.
 - Diffuse damage in proximal small intestine villi → malabsorption of the nutrients
- **SYNONYMS**
 - Gluten-sensitive enteropathy
 - Celiac sprue
 - Nontropical sprue

Chemistry of Grain Proteins



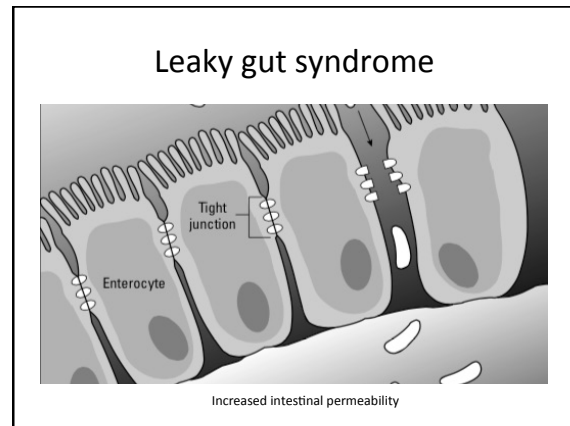
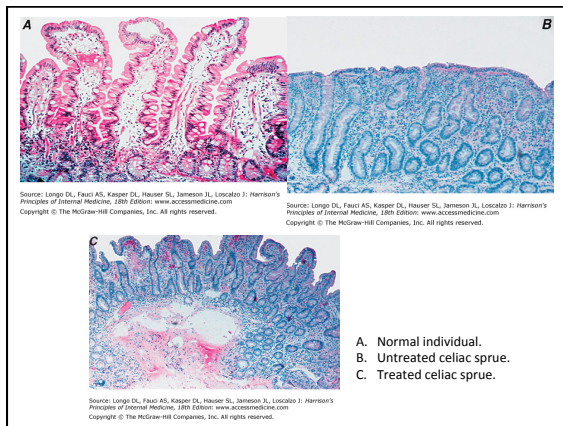
Taxonomic relationship of major cereal grains



Reference: Text book of natural medicine, Pizzorno, p1281

Diagnosis

- Evidence of malabsorption: ↑ stool fat (>7g/day)
- Serologic test – screening & F/U
 - Antigliadin Ab, anti-endomysial Ab (EMA), anti-tTG (tissue transglutaminase) Ab
- Small bowel (jejunal) biopsy – confirmatory
 - Flattened villi, crypt hyperplasia, ↑ intraepithelial lymphocytes, etc.
- Gluten-free diet: clinical, serologic, histologic improvement
- Treatment
 - Gluten-free diet



Lactose intolerance

- Secondary lactase deficiency,
 - Consequence of changes in jejunal brush border enzymatic function
- Low-disaccharide diet
 - Lactose, sucrose, maltose, and isomaltose are the major disaccharides
 - Lactose: dairy
 - Sucrose: table sugar, honey, molasses, syrup, fruits juices, canned fruits, soda, ketchup, etc.
 - Maltose: malt, beer, cereal, pasta, potatoes, barley
 - Isomaltose: starch
 - Specific Carbohydrate diet
 - excludes all grains (including wheat, oats, barley, rye, corn, rice, millet, buckwheat, spelt, and triticale), milk and other lactose-containing foods, potatoes, soybeans and certain other beans, corn syrup, foods that contain sucrose, and a number of other foods

Sucrose

Lactose

Maltose

Gluten free diet

- Avoid any and all foods that contains gluten
- Read all labels carefully.
- Watch for “**hidden**” sources of gluten
 - Hydrolyzed vegetable protein, textured vegetable protein, hydrolyzed plant protein
 - All derivatives of wheat, rye, oats, and barley, including malt, modified food starch, some soy sauces, grain vinegars, binders, fillers, inert substances, and “natural flavorings.”
 - Do not consume hot dogs, gravies, luncheon meat, beer, mustard, nondairy creamer, malt vinegar, curry powder, or seasonings.

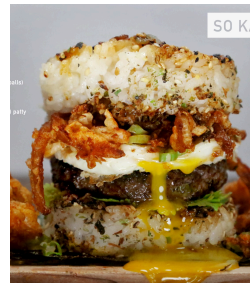




Convenience matters!
Use mason jar



Kalbi Burger



- Ground organic beef 300g, onion ½
- Sauce: Gluten free soy sauce 6T, organic sugar 5T, sesame seed oil 3T, green onions 1/3 (green part), garlic 3 pieces, ground black pepper 1/3t



Mini Kalbi burger



Table barbecue



SSam



Sauce: Sesame seed oil and sea salt

Sriracha sauce



Grilled chicken/ Souvlaki



Bibimbap



Ingredients: Cooked rice, carrots, zucchinis, bean sprouts, spinach, green leaves, eggs

Sauce: replace Korean chili pepper paste with Sriracha sauce and sesame oil

Recipe: <http://www.maangchi.com/recipe/bibimbap>

Sushi / rice rolls



Ingredients: 3 cups of uncooked Short grain brown rice, vinegar 1/3 cup (80ml), organic sugar 3T, sea salt 1 1/2 tea spoons, Nori seaweed sheets
 Recipe: http://www.justnecookbook.com/how_to/how-to-make-sushi-rice/
<http://www.justnecookbook.com/sushi-rolls/>



Rice noodles



Chicken noodle soup

Ingredients: Rice noodles, shrimp or chicken, cilantro
 Broth: Organic chicken stock, onions, celery, carrots, mushrooms, and any veggies you like



Pad Thai

Ingredients: Rice noodles, shrimp or chicken, garlic, mung bean sprouts
 Sauce: 1 part gluten free soy sauce, 1 part organic sugar/honey, Sriracha, Ketchup

Creamy avocado spinach pasta



- Ingredients: 10 oz brown rice pasta
- Sauce: 1 clove of garlic, 1 avocado, 1 cup fresh spinach, 1/2 cup pecans, 1/4 cup basil, 1 tbsp fresh lemon juice, 1/4 to 1 cup pasta, water, salt and pepper to taste

Reference: <http://www.jocooks.com/healthy-eating/creamy-avocado-spinach-pasta/>

Spring roll



Ingredients: Rice paper, vermicelli, carrots, cucumbers, peppers, mushrooms, avocado, shrimp, cilantro, mushrooms
 Sauce: Apple butter + Almond butter + water

Roasted root vegetables



Ingredients: Sweet potatoes, yams, cauliflower, broccoli, squash, pumpkin, carrots, beets
 → Season it with salt, pepper, and olive oil → bake it for 45~60 minutes.

Watermelon Cake



Ingredients: Watermelon, Coconut cream, Toasted almonds, seasonal fruits

Chick pea brownie



Ingredients: 1 can of Chick peas, 2 eggs, 1/3 cup raw cacao powder, 2/3 cup cocoa sugar, 1/2 cup of olive oil

Green smoothie



Add a scoop of protein power (Good brand: Vega, Sun Warrior, Progressive) and almond milk with your favorites fruits and veggies

Blogs



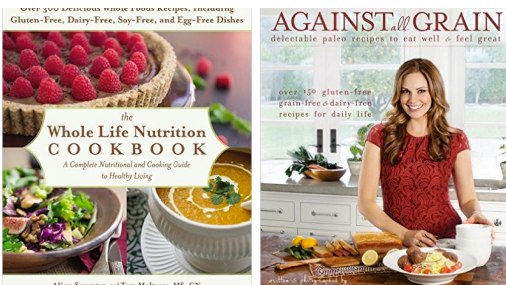
<http://www.maangchi.com/>



<http://steamykitchen.com/>

Korean recipe: replace Korean chili pepper sauce with Sriracha sauce. Sriracha sauce is gluten free.

Cook Books



Correct nutritional deficiency

- **Multi vitamin and mineral supplements**
 - To correct common deficiencies.
- **Folic acid, (Folate, B9)**
 - Plays a role in the synthesis of DNA and RNA
 - Involved in homocysteine and vitamin B12 metabolism, as well as the immune and neurological system.
 - Can cause anemia and atherosclerosis ("hardening of the arteries")
 - Food sources: Green leafy vegetables, legumes, citrus fruits, beets, whole grains
- **Vitamin B6 (Pyridoxine)**
 - Important nutrient for carbohydrates metabolism, brain and nerve system health, and liver detoxification
 - Warning: >500mg/day can cause peripheral neuropathy
 - Food sources: Tuna, turkey, beef, chicken, salmon, sweet potato, sunflower seeds, spinach, banana
- **Vitamin B12 (cobalamine)**
 - Deficiency can lead to: Macrocytic anemia, neurological disorders, psychiatric symptoms (memory loss, depression, confusion, paranoia), glossitis, peripheral neuropathy
 - Food sources: Meat, poultry, fish, dairy and eggs

Correct nutritional deficiency

- **Iron**
 - Important component of hemoglobin
 - Needed for synthesis of thyroid hormone and for conversion of tyrosin to dopa and dopamine
 - Food sources: Poultry, fish, meat
- **Zinc**
 - Skin, Immune
 - Toxicity: Large doses may cause copper deficiency
 - Food sources: beef, lamb, sesame seeds, pumpkin seeds, lentils, garbanzo beans, cashews, turkey, quinoa, shrimp, etc.
- **Copper**
 - Immune, anemia, cancer, RA

Correct nutritional deficiency

- **Vitamin A**
 - Plays a role in maintaining epithelial tissues of the skin, gastrointestinal tract, respiratory tract, and genitourinary tract
 - Need in visual function, spermatogenesis and immune function.
 - Caution during pregnancy and chronic smoker
 - Food sources: liver and fish liver oils, eggs, dairy, spinach, kale, cantaloupe, etc.
- **Vitamin E**
 - Antioxidant, prevent cell damage
 - Deficiency can lead to: anemia, nerve damage, muscle injury
 - Synthetic vitamin E: D,L-alpha-tocopherol acetate, synthetic forms cause cancer
 - Natural vitamin E: D-alpha-tocopherol
- **Selenium**
 - Antioxidant, Plays a role in converting thyroid hormone, enhances immune unction
 - Toxicity: Narrow margin of safety
 - Food sources: Tuna, shrimp, sardines, salmon, turkey, cod, chicken, lamb, scallops, beef

Correct nutritional deficiency

- **Vitamin K**
 - Produced by intestinal gut flora, necessary for blood clotting, bone formation and repair
 - Food sources: leafy green vegetables, cheese, egg yolks
- **Magnesium**
 - Deficiency is common in people with celiac disease.
 - Used in: Constipation, arrhythmia, hypertension, asthma, migraine, diabetes, etc
 - Food sources: Nuts, whole grains, legumes, leafy green vegetables, dairy, meat, fish
- **Calcium**
 - Important for bone health and heart function
 - Toxicity: kidney stones, cardiovascular disease (depletes magnesium which is a cardioprotective agent)
- **Vitamin D3 (cholecalciferol)**
 - Stimulates absorption of calcium. People with celiac disease frequently have calcium deficiencies.
 - Food sources: Cod liver oil, fish (salmon, mackerel, sardines)
- **Pancreatic enzymes**
 - Additional digestive enzymes may be needed to aid in breakdown and absorption of foods
- the world's healthiest foods.com www.whfoods.com

Preventing celiac disease

- Timing of introduction of gluten into the infant diet is associated with the appearance of celiac disease in children at risk.
- Children initially exposed to gluten in the first 3 mo of life have a fivefold increased risk.
- Breastfeeding

www.sunmihealth.com

THANK YOU!