

# Gluten-Free Foods: Consumption Patterns and Purchasing Practices of Consumers with Celiac Disease

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# Topics to be Addressed

- Types of gluten-free packaged foods consumed by persons with celiac disease (CD)
- Consumption patterns of packaged food labeled “gluten free”
- Influence of “gluten-free” labeling on purchasing decisions
- Information used by persons with CD to identify gluten-free foods

# Types of Gluten-Free Foods: Gluten-Free Diet Survey\*

- Food consumption patterns of 47 adults with CD were assessed using three-day estimated self-reported food records
- Group mean daily intake of grain food servings was 4.6 for women (n=39) and 6.6 for men (n=8)

\*Thompson T, Dennis M, Higgins LA, Lee AR, Sharrett MK. Gluten-free diet survey: are Americans with coeliac disease consuming recommended amounts of fibre, iron, calcium and grain foods? *J Hum Nutr Dietet.* 2005;18:163-169.

# Types of Gluten-Free Foods: Gluten-Free Diet Survey (cont)

- Types of grain foods and total number of servings consumed by study participants over three-day recording period\*
  - Sandwich breads, rolls, bagels, English muffins, pizza crust (139.5 servings)
  - Ready-to-eat breakfast cereal (107.5 servings)
  - Savory snacks (98.5 servings)
  - Quick breads, donuts, muffins (76 servings)
  - Rice (75 servings)
  - Corn tortillas (47 servings)
  - Sweet snacks (41 servings)
  - Waffles, pancakes (37 servings)
  - Pasta (32 servings)
  - Rice cakes (28.5 servings)
  - Hot cereal (25 servings)

\*Thompson, et al. J Hum Nutr Dietet. 2005;18:163-169.  
Previously unreported data

# Gluten-Free Diet Survey: Consumption Patterns

- Whether survey participants\* were primarily consuming grain products labeled “gluten-free” depended on the type of grain food:
  - Sandwich breads, etc
  - Pasta, etc
  - Corn tortillas, etc
  - Frozen entrees

\*Thompson, et al. J Hum Nutr Dietet. 2005;18:163-169. Previously unreported data

# Consumption Patterns: Sandwich Breads, etc

- Sandwich breads, rolls, bagels, English muffins, pizza crust, pretzels, waffles, pancakes, quick breads, donuts, muffins, cakes, and cookies
  - Products consumed were almost exclusively manufactured by companies who produce only gluten-free foods or have specially formulated gluten-free product lines
  - Products generally have a prominent “gluten-free” statement on their packaging

# Gluten-Free Product Labeling: Examples



“Gluten Free” statement prominently displayed on packaging of specially formulated gluten-free foods

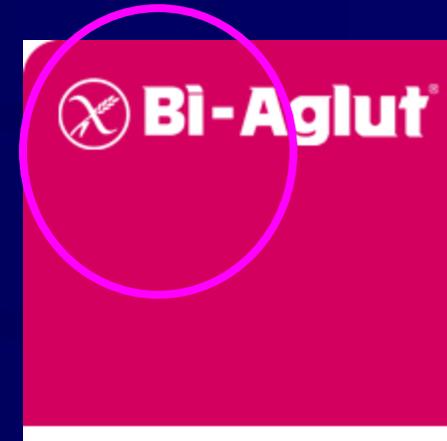


Sources: Nature's Path Foods  
[www.naturespath.com](http://www.naturespath.com); Food for Life  
[www.foodforlife.com](http://www.foodforlife.com)

# Consumption Patterns: Pasta, etc

- Pasta, ready-to-eat cereal, hot cereal, and crackers
  - Foods consumed included products specially formulated to be gluten-free as well as products typically made without gluten-containing ingredients
  - As with bread products, specially formulated pasta, breakfast cereals, and crackers generally have a prominent “gluten-free” statement on their packaging

# Gluten-Free Product Labeling: Examples



The wheat stalk with a slash through it is sometimes used to symbolize a gluten-free product

# Consumption Patterns: Pasta (cont)

- Pasta, ready-to-eat cereal, hot cereal, and crackers
  - Products typically made without gluten-containing ingredients include:
    - “Asian” style rice noodles
    - Corn or rice-based ready-to-eat and hot cereals
    - Rice-based crackers
  - Products may or may not have a “gluten-free” statement on their packaging

# Consumption Patterns: Pasta (cont)

- Pasta, ready-to-eat cereal, hot cereal, and crackers
  - If product labeling does contain a “gluten-free” statement, it tends to be less prominently displayed compared to specially formulated gluten-free foods
    - One brand of rice crackers has both “no gluten added” and “may contain trace amounts of wheat” statements on its packaging

# Consumption Patterns: Corn Tortillas, etc

- Corn tortillas, plain rice, plain tortilla chips, plain popcorn, and rice cakes
  - Products (with the exception of rice cakes) are generally made without gluten-containing ingredients
  - Some of these products have a relatively small “gluten-free” statement on their label; many do not

# Consumption Patterns: Corn Tortillas (cont)

- Corn tortillas, plain rice, plain tortilla chips, plain popcorn, and rice cakes
  - One brand of corn tortillas has a small “gluten-free” statement on the back of its packaging
  - One brand of rice includes the statement “packed in a plant that handles wheat products” below the ingredient list

# Consumption Patterns: Frozen Entrees

- Grain-based frozen entrees (e.g., enchilada, stir fry)
  - All frozen entrees consumed by survey participants were clearly labeled “gluten-free”



Source: Amy's Kitchen  
[www.amys.com](http://www.amys.com)

# Influence of Labeling: Celiac Disease Center Survey\*

- Summary of respondent findings to date:
  - Rely most often on “gluten-free” labeling to identify gluten-free products
  - More likely to purchase food with a “gluten-free” label on the front of product package as compared to the back
  - All purchase product labeled “gluten-free” when presented with 2 products containing identical ingredients but only 1 is labeled

## Influence of Labeling: CDC survey (cont)

- Summary of respondent findings to date
  - More than 1/2 report purchasing products labeled “gluten-free” even if they are not produced in a dedicated gluten-free facility
  - More than 3/4 report purchasing products not labeled “gluten-free” if the product does not contain any gluten-based ingredients
  - The ingredient list is the determining factor in product selection when purchasing unlabeled products

# Identifying gluten-free food

- When purchasing and consuming food, persons with CD are advised to:
  - Strictly avoid the proteins from wheat (all types and varieties); barley; rye; and triticale (a cross between wheat and rye)
  - Read all labels and ingredient lists for obvious and “hidden” sources of these grains

# Identifying gluten-free food: ADA Nutrition Care Manual\*

- Client education materials
  - Label reading tips
    - You should read all food labels and ingredient lists carefully for sources of wheat, barley, and rye. While many sources of these grains will be obvious to you, others may not. The information that follows is provided to help you identify hidden sources of wheat, barley, and rye in ingredient lists.

\*Tricia Thompson. Celiac Disease. ADA Nutrition Care Manual. 2004. Available at: [www.nutritioncaremanual.org](http://www.nutritioncaremanual.org). Accessed July 13, 2005.

# Identifying gluten-free food: Nutrition Care Manual (cont)

- Other terms for wheat
  - All of the following words indicate the presence of wheat and foods containing these ingredients should not be eaten:
    - Graham flour
    - Semolina
    - Farina
    - Durum flour
    - Self-rising flour
    - Phosphated flour
    - Enriched flour
    - Bromated flour
    - Plain flour
    - White flour
    - Flour

# Identifying gluten-free food: Nutrition Care Manual (cont)

- Foods and ingredients made from barley
  - Some foods and ingredients are usually made from barley (unless it is otherwise stated on the food label). You should not eat any foods containing the following ingredients:
    - Beer, ale, porter, stout, and other such fermented beverages  
Note: Distilled alcoholic beverages such as vodka and gin are gluten free.
    - Malt
    - Malt syrup/malt extract
    - Malted beverages
    - Malted milk
    - Malt vinegar Note: Other vinegar such as cider, wine, and distilled vinegar are gluten free.

# Identifying Gluten-Free Food: Nutrition Care Manual (cont)

- Ingredients that may be made from wheat, barley, or rye
  - Some ingredients may be made from wheat, barley, or rye. If these ingredients are made from a harmful grain, foods containing them should not be eaten.
    - Modified food starch Note: Unless otherwise stated on the food label, the single word “starch” in an ingredient list means corn starch and is gluten-free.
    - Dextrin Note: Unless otherwise stated on the food label, maltodextrin is made from corn starch, rice starch, or potato starch and is gluten free.
    - Natural flavor
    - Caramel color

# Identifying Gluten-Free Food: Nutrition Care Manual (cont)

- Ingredients that may be made from wheat, barley, or rye (cont)
  - It is important to note that in the United States, wheat, barley, and rye do not appear to be used that often in the manufacture of the above ingredients\*. Nonetheless, the only way you can be absolutely sure that a food containing modified food starch, dextrin, natural flavor, or caramel color is gluten free is to contact the manufacturer and ask about the source of the ingredient. The name of the manufacturer should be listed on the food label and an address, phone number, and/or website generally are provided. You may want to talk to your dietitian further about these ingredients.

# Identifying Gluten-Free Food: Nutrition Care Manual (cont)

- Processed foods that may contain wheat, barley, or rye
  - You should check the ingredient list of all processed foods for sources of wheat, barley, and rye. Examples of processed foods that may contain these ingredients include the following:
    - Bouillon cubes
    - Brown rice syrup
    - Candy
    - Cold cuts, hot dogs, salami, sausage
    - Communion wafers
    - French fries
    - Gravy
    - Imitation fish
    - Matzo
    - Rice mixes
    - Sauces
    - Seasoned tortilla chips or potato chips
    - Self-basting turkey
    - Soups
    - Soy sauce
    - Vegetables in sauce

# Gluten-Free Food: Availability

- Labeled “gluten-free” products are available from:
  - Mail-order companies (offer the greatest selection of labeled “gluten-free” products)
  - Small local natural food stores
  - Large National natural food stores such as Whole Foods and Trader Joe’s
  - Large supermarkets with a natural foods department

# Cost Comparison: On-Line vs In-Store\*



- Gluten-free pasta
  - Data based on same product priced at two different stores and two different on-line sites
  - Cost shown in price per ounce, not including shipping and handling

# Cost comparison: On-Line vs In-Store\*



- Gluten Free Crackers
  - Data based on same product priced at two different stores and two different on line sites
  - Cost shown in price per ounce, not including shipping and handling

# Gluten-Free Foods: Final Thoughts

- Persons with CD consume a wide variety of gluten-free foods
- Products may or may not be labeled “gluten-free”
- Strong preference to purchase foods labeled “gluten-free”
- Difficult to determine gluten-free status of unlabeled products even when educated on label reading