



Undeclared Gluten in Gluten-Free Bakery Mixes - April 1, 2017 to March 31, 2018

Food allergen – Targeted surveys



Summary

Targeted surveys provide information on potential food hazards and enhance the Canadian Food Inspection Agency's (CFIA's) routine monitoring programs. These surveys provide evidence regarding the safety of the food supply, identify potential emerging hazards, and contribute new information and data to food categories where it may be limited or non-existent. We use them to focus surveillance on potential areas of higher risk. Surveys can also help identify trends and provide information about how industry complies with Canadian regulations.

Food allergies can affect people of all ages but are particularly common in children. Food allergens can represent a serious or life threatening health risk for allergic individuals. Additionally, although it is not considered an allergen, undeclared gluten may contribute to chronic health issues for those individuals with celiac disease or gluten sensitivity. Allergens and gluten can be found in food due to their presence in the raw ingredients or they can be accidentally introduced along the food production chain due to cross contamination. Regardless of the source of the allergens, industry must ensure that the food produced is safe for human consumption, either by complying with specific Canadian regulations where applicable or by keeping the levels as low as reasonably possible.

The main objective of this survey was to obtain baseline information regarding the presence and levels of undeclared gluten in gluten-free bakery mixes. Of the 300 samples tested, 9 were found to contain undeclared gluten. The most frequent positive results of the presence of undeclared allergens were in the dessert mixes.

4 positive results for gluten higher than 20 parts per million (ppm) were forwarded to the CFIA's Office of Food Safety and Recall (OFSR) to determine if the levels found would pose a health risk to allergic individuals. 2 products were deemed to represent a health risk and were recalled.

What are targeted surveys

Targeted surveys are used by the CFIA to focus its surveillance activities on areas of higher health risk. The information gained from these surveys provides support for the allocation and prioritization of the Agency's activities to areas of greater concern. Targeted surveys are a valuable tool for generating information on certain hazards in foods, identifying and characterizing new and emerging hazards, informing trend analysis, prompting and refining health risk assessments, highlighting potential contamination issues, as well as assessing and promoting compliance with Canadian regulations.

Food safety is a shared responsibility. The agency works with federal, provincial, territorial and municipal governments and provides regulatory oversight of the food industry to promote safe handling of foods throughout the food production chain. The food industry and retail sectors in Canada are responsible for the food they produce and sell, while individual consumers are responsible for the safe handling of the food they have in their possession.

Why did we conduct this survey

Approximately 7% of Canadians have self-reported as having at least 1 food allergy, but the actual number of medically confirmed food allergies is expected to be slightly lower¹. It is believed that the rate of food allergies is increasing, particularly among children. Food allergies are estimated to affect up to 5% of adults and up to 8% of children in developed countries². Food allergens are food proteins that can cause a reaction of the body's immune system, and can represent a serious or life threatening health risk for allergic individuals, or contribute to chronic health issues for those with pre-existing health conditions like celiac disease. Celiac disease is a chronic reaction where the body reacts to a component of gluten which can damage or destroy certain intestinal cells. Approximately 1% of the total population are affected with celiac disease³.

The priority food allergens are the 10 most common food allergens that are associated with severe allergic or allergy-like reactions in Canada. These allergens consist of peanuts, tree nuts, sesame, seafood (fish, shellfish and crustaceans), eggs, milk, soy, mustard, sulphites, and wheat⁴. Gluten, while not a true allergen, is a family of proteins found in certain grains like wheat, rye, barley, kamut, and spelt and is included in this list⁵. Gluten can cause digestive problems and other issues for people with certain health conditions such as celiac disease and gluten sensitivity. This makes proper identification and labeling of allergens in food by the manufacturer essential.

Undeclared allergens can be found in foods due to their presence in the raw ingredients, or can be accidentally introduced along the food production chain through cross contamination. Regardless of the source of the allergens, industry must ensure that the food they produce is safe for human consumption. This can be achieved by complying with specific Canadian regulations where applicable, or by keeping the levels as low as reasonably possible.

This was the first survey conducted by the agency for undeclared gluten in gluten-free bakery mixes. The main objective of this survey was to obtain baseline information regarding the presence and levels of undeclared gluten in gluten-free bakery mixes.

All products were tested "as sold," meaning that they were not prepared as per the manufacturer's instructions or as they would typically be consumed.

What did we sample

All products were sampled between April 2017 and March 2018. Samples were collected from local and regional grocery stores located in 6 major cities across Canada. These cities encompassed 4 geographical areas: Atlantic (Halifax), Quebec (Montreal), Ontario (Toronto, Ottawa) and the West (Vancouver, Calgary). The number of samples collected from these cities was in proportion to the relative population of the respective areas.

The following products were not included in the survey:

- Products with any of the following allergens in the list of ingredients - wheat, rye, barley, triticale, kamut, spelt or gluten
- Products with oat in the list of ingredients, but without a “Gluten free” claim
- Products with no list of ingredients
- Products with a precautionary statement for wheat, rye, barley, triticale, kamut, spelt or gluten

Table 1. Distribution of samples based on product type and origin

Product type	Domestic	Import	Unspecified ^a origin	Total
All-purpose mixes	6	2	1	9
Bread mixes	10	26	15	51
Dessert mixes	58	62	29	149
Other mixes	26	36	29	91
Total	100	126	74	300

^a Unspecified refers to those samples for which a country of origin could not be determined from the product label or available sample information.

How were samples analyzed and assessed

Samples were analyzed by an ISO/IEC 17025 accredited food testing laboratory under contract with the Government of Canada. The samples were tested as sold, meaning that the product was tested as-is and not as prepared according to package instructions.

In Canada, food allergens and gluten must be declared in the list of ingredients if they are present in the prepackaged product in order to comply with the requirements of the [Food and Drug Regulations Section B.01.010.1](#). A prepackaged product will be deemed non-compliant if any level of undeclared allergens and gluten is detected.

Health Canada considers that gluten-free foods, prepared under good manufacturing practices, which contain levels of gluten not exceeding 20 ppm (due to cross contamination) meet the intent of the [Food and Drug Regulations Section B.24.018](#) for a gluten-free claim.

What were the survey results

97% of all gluten-free bakery mixes sampled in this survey did not contain any detectable levels of gluten. The majority of gluten positive samples were present in dessert mixes. The results for

the 9 samples found positive are shown in table 2. Of them, 4 had gluten level exceeding 20 ppm.

Table 2. Levels of undeclared gluten in gluten-free bakery mixes in ppm

Sample type	Sample description	Gluten (ppm)
All-purpose mixes	Wild rice and flax pancake, waffle and muffin mix	5
Bread mixes	Protein bread mix	650
Dessert mixes	Rice flour for cake	99
Dessert mixes	Steamed rice cake mix	6
Dessert mixes	Rice idli rice cake mix ready to mix – 1	71
Dessert mixes	Rice idli rice cake mix ready to mix – 2	12
Dessert mixes	Spiced apple raisin muffin mix	15
Dessert mixes	Sweet potato and cinnamon muffin mix	12
Other mixes	Saigon pancake flour mix	120

What do the survey results mean

Of the 300 samples tested, 97% did not contain detectable gluten, while 9 samples were found to contain undeclared gluten ranged from 5 to 650 ppm. In this survey, gluten was most frequently present in dessert mixes.

The best currently available scientific evidence indicates that levels of gluten at or below 20 ppm in gluten-free foods would be protective of the health of the vast majority of people with celiac disease⁵. Therefore, 4 positive results for gluten higher than 20 ppm were forwarded to the CFIA's OFSR for follow-up.

The extent of the follow-up actions taken by the CFIA is based on the level of contamination and the resulting health concern as determined by a health risk assessment. Appropriate follow-up actions include additional sample testing, facility inspection and product recall. The health risk assessment is based on exposure to the allergens and gluten through consumption. The exposure is calculated by using the typical serving sizes for each food. Assessment based on serving size means not all detectable levels of undeclared allergens and gluten in food will cause a reaction in an allergic individual.

Undeclared gluten can be present in a food due to cross-contamination as a result of manufacturing or distribution practices, as grains containing gluten are widely used in the production of many pre-packaged foods⁶. 2 positive samples were deemed to represent a health risk and were recalled^{7,8}.

This survey generated new information on the background level of undeclared gluten in gluten-free bakery mixes collected from 6 cities across Canada. Information gathered in this survey, in conjunction with other data including the Canadian Total Diet Study, and Statistics Canada's Canadian Health Measures Survey food consumption data, are critical in assessing the health risk that our food supply poses to Canadian consumers. The results of agency's surveillance activities are also used to inform the Canadian public and stakeholders by raising consumer

awareness and to help build public confidence in their food supply by removing non-compliant products.



References

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