

Undeclared Allergens in Bakery Products – April 1, 2019 to March 31, 2021

Food chemistry - Targeted surveys – Final report



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. They are often used by the Agency to focus surveillance on potential areas of higher risk. Surveys can also help to identify trends and provide information about how industry complies with Canadian regulations.

Food allergies can affect people of all ages. 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.

A total of 182 samples of bakery products were tested for undeclared allergens. 91.2% (166) of samples did not contain any undeclared allergens. 8.8% (16) of samples were positive for undeclared allergens such as milk protein (beta-lactoglobulin (BLG) and casein), egg, peanut and sesame.

All positive results were forwarded to the CFIA's Office of Food Safety and Recall (OFSR) to determine if the levels found would pose a health concern to allergic individuals. There were 5 product recalls in this survey, 2 for undeclared egg, 1 for sesame, 1 for peanut and 1 for milk (BLG). The extent of the follow-up actions taken by CFIA is based on the seriousness of the contamination and the resulting health concern as determined by a health risk assessment.

What are targeted surveys

Targeted surveys are used by the CFIA to focus its surveillance activities on areas of highest 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. Originally started as a project under the Food Safety Action Plan, targeted surveys have been embedded in our regular surveillance activities since 2013. 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. We work with federal, provincial, territorial and municipal governments and provide 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 diagnosed 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 disease³.

The priority food allergens are the 10 most common food components 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.

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 survey tested for undeclared allergens in bakery products such as bread, tortillas and squares. The main objective of this survey was to monitor the presence and levels of undeclared allergens including milk (BLG and casein), gluten, almond, hazelnut, peanut, egg, sesame, and soy in bakery products. All products were tested “as sold”, meaning that they were not prepared as per manufacturer’s instructions (that is, as they would typically be consumed).

What did we sample

A total of 182 samples of bakery products such as bread, cake, pies/pie crusts, cookies, cakes, squares, tortillas, buns, rolls, bagels, pitas, donuts and bars were sampled between April 1, 2019 to March 31, 2021. Samples of products were collected from local/regional retail locations across 6 major cities across Canada. These cities encompassed 4 Canadian geographical areas:

- Atlantic (Halifax)
- Quebec (Montreal)
- Ontario (Toronto and Ottawa)
- West (Vancouver and Calgary)

The number of samples collected from these cities was in proportion to the relative population of the respective areas. Refer to Table 1 for the product types collected in this survey.

The following products were not included in the survey:

- products with all of the following allergens in the list of ingredients – almond, hazelnut, milk/dairy, peanut, soy, egg, sesame, wheat, barley, oats, rye, triticale, kamut, spelt, or gluten
- products with no list of ingredients for which it is required
- products with a precautionary statement for all priority allergens
- non-prepackaged products
- products past the “use by” or “best before” date

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

Product type	Number of domestic samples	Number of imported samples	Number of samples of unspecified origin ^a	Total number of samples
Bagels	15	2	12	29
Bars/squares	8	1	6	15
Bread	21	1	10	32
Buns/rolls	12	7	11	30
Cake	11	2	3	16
Cookies	4	5	8	17
Donuts	7	2	6	15
Pies/pie crusts	3	3	10	16
Tortilla/pita	4	3	5	12
Grand total	85	26	71	182

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

How were samples analyzed and assessed

Samples were analyzed by an ISO/IEC 17025 accredited laboratory. All positive samples are assessed against [Section B.01.010 of the Food and Drug Regulations](#). 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 parts per million (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

Out of 182 samples of bakery products, 166 (91.2%) were satisfactory. BLG, casein, egg, sesame and peanut positives were found in various bakery products as seen in Table 3. The majority of undeclared allergens were found in bagels, bread and bun/roll products.

Table 2. Number of positive samples

Product type	Number of satisfactory samples	Number of unsatisfactory samples	Total number of samples
Bagels	25	4	29
Bars/squares	14	1	15
Bread	28	4	32
Buns/rolls	26	4	30
Cake	16	0	16
Cookies	17	0	17
Donuts	14	1	15
Pie/pie crusts	16	0	16
Tortilla/pita	10	2	12
Grand total	166	16	182

Table 3. Levels of allergens found in positive samples

Sample	Product type	BLG (ppm)	Casein (ppm)	Egg (ppm)	Sesame (ppm)	Peanut (ppm)
1	Bagel					1.5
2	Bagel	0.7	3	13		
3	Bagel			1.1		
4	Bagel			1.1		
5	Bar/square ^a		2.7			
6	Bread	18				
7	Bread				0.6	
8	Bread				1400	
9	Bread ^a			1.1		
10	Buns/rolls ^a	0.7				
11	Buns/rolls			3800		
12	Buns/rolls ^a			0.7		
13	Buns/rolls	2.4	30			
14	Donut ^a					0.9
15	Tortilla/pita ^a		3			
16	Tortilla/pita ^a			14		

Note: All samples were tested for a variety of allergens based on the ingredients in the food. All blank cells indicate that there were no detectable levels of undeclared allergen.

^aResults were based on the composite value not the individual sample.

What do the survey results mean

Based on this survey of 182 samples, 91.2% (166 samples) did not contain any detectable levels of undeclared allergens. Undeclared allergens were found in 8.8% (16 samples) of bakery product samples and consisted primarily of low levels of milk and egg.

The milk proteins, BLG and casein, were present in 2 (1.1%) of the samples tested, 2 samples tested positive for BLG (1.1%), 2 samples tested positive for casein (1.1%), 7 samples (3.8%) tested positive for undeclared egg, 2 samples (1.1%) tested positive for sesame and 2 samples (1.1%) tested positive for peanut. Low levels of undeclared allergens could potentially be introduced into products due to cross contamination in an ingredient or in the final product⁵. The high level of egg (3800 ppm) in a bun/roll sample and the high level of sesame (1400 ppm) in a bread sample were due to improper labeling.

The extent of any follow-up action taken by CFIA is based on the seriousness of the contamination and the resulting health concern as determined by a health risk assessment. Not all detectable levels of undeclared allergens and gluten pose a risk to consumers. Health risk assessments are based on exposure to an allergen 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. All positive results were sent to the CFIA's OFSR to determine if the levels found would pose a health concern to allergic individuals. There were 5 product recalls in this survey for undeclared egg (2 samples), 1 for sesame, 1 for peanut and 1 for milk (BLG protein). There was a product recall for a sample of buns/rolls due to undeclared egg⁶, a sample of bread due to undeclared sesame⁷, a sample of donuts due to undeclared peanut⁸, a sample of tortillas due to undeclared egg⁹ and a sample of bread due to undeclared BLG¹⁰.

This survey generated information on the background level of undeclared allergens in bakery products collected across Canada. Information gathered in this survey along with data from 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 CFIA's surveillance activities are also used to inform the Canadian public and stakeholders by raising consumer awareness and help build public confidence in their food supply by removing non-compliant products.

References

1. Soller, L., Ben-Shoshan, M., Harrington, D. W., Fragapane, J., Joseph, L., Pierre, Y. S., Clarke, A. E. (2012). Overall prevalence of self-reported food allergy in Canada. *Journal of Allergy and Clinical Immunology*, 130(4), 986-988.
2. Sicherer, S. H., & Sampson, H. A. (2014). Food allergy: Epidemiology, pathogenesis, diagnosis, and treatment. *Journal of Allergy and Clinical Immunology*, 133(2), 291-307.e5.
3. [Celiac disease foundation](#). (2018). United States. Celiac Disease Foundation.
4. [Common food allergens](#). (2018). Canada. Health Canada.
5. [Food Allergies](#). (2021) United States. US FDA.
6. [FV Foods Brand Hawaiian Sweet Roll recalled due to undeclared egg](#). (2019). Canada. Government of Canada.
7. [The Artisan Bake Shoppe Ltd brand Organic Multigrain Bread recalled due to undeclared sesame](#). (2020). Canada. Government of Canada.
8. [Annette's Brand Mini Donuts – Powdered recalled due to undeclared peanut](#). (2021). Canada. Government of Canada.
9. [Unbun Brand Untortillas recalled due to undeclared egg](#). (2021). Canada. Government of Canada.
10. [Ralph's brand bread products recalled due to undeclared milk](#). (2019). Canada. Government of Canada.