



Canadian Food
Inspection Agency

Agence canadienne
d'inspection des aliments

Undeclared Allergens and Gluten in Valentine's Day-Themed Candy and Chocolate Products - April 1, 2018 to March 31, 2019

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 allergens and gluten in Valentine's Day-themed candy and chocolate products. Of the 345 samples tested, 10 were found to contain undeclared gluten or allergens such as beta-lactoglobulin (BLG), peanut, almond and hazelnut.

All positive results obtained during the course of these surveys 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. The extent of the follow-up actions taken by the CFIA is based on the level of the contamination and the resulting health concern as determined by a health risk assessment. A single candy product containing gluten and 1 chocolate product containing both hazelnut and almond 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 allergens and gluten in Valentine's Day-themed candy and chocolate products. The main objective of this survey was to obtain baseline information regarding the presence and levels of undeclared allergens including egg, mustard, sesame, soy, peanut, almond, hazelnut, gluten, and the milk proteins casein and BLG in Valentine's Day-themed candy and chocolate products.

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 2018 and March 2019. 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 **all** of the following allergens in the list of ingredients – almond, hazelnut, peanut, mustard, sesame, soy/soybean, egg, milk, and wheat, barley, oats, rye, triticale, or gluten
- products with a precautionary statement for all priority allergens
- non pre-packaged products
- products with multi-flavours
- products with no list of ingredients
- products past the best before date

Table 1: Distribution of products based on product type and origin

Sample type	Domestic	Imported	Unspecified ^a origin	Total
Candy products	43	115	14	172
Chocolate products	54	99	20	173
Total	97	214	34	345

^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

Tests were assigned sample by sample after label review. If the presence of allergens (soy/soybean, egg, milk, and wheat, barley, oats, rye, triticale, or gluten) were indicated by inclusion in the list of ingredients or by way of a precautionary statement, analysis for these allergens were not carried out.

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 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

Over 97% of all Valentine’s Day-themed candy and chocolate products sampled in this survey did not contain any detectable levels of allergens. 10 samples were positive for gluten, BLG, peanut, almond and hazelnut. Details the types of products from the survey where undeclared allergens were found are shown in Table 2 as well as which allergen was detected and at what level.

Table 2: Levels of undeclared allergens and gluten in Valentine’s Day-themed candy and chocolate products in ppm

Sample type	Sample description	Almond (ppm)	BLG (ppm)	Gluten (ppm)	Hazelnut (ppm)	Peanut (ppm)
Candy products	Fruit chews – 1		0.6			
Candy products	Fruit chews – 2		1.1			
Candy products	Fruit chews – 3		0.4			
Candy products	Jelly beans – 1		0.6			
Candy products	Jelly beans – 2		0.9			
Candy products	Jelly beans – 3		0.8			
Candy products	Jelly beans – 4		0.5			
Candy products	Jellies			910		
Chocolate products	Milk chocolate					0.6
Chocolate products	Heart shaped chocolate	11.3			11.2	

Note: All samples were tested for a variety of allergens dependant on the ingredients in the food. Only positive results for allergens were included in the table.

What do the survey results mean

Of the 345 samples tested in this survey, over 97% did not contain any detectable levels of undeclared allergens and gluten, while only 10 samples were found to contain varying levels of undeclared BLG, peanut, gluten, almond and hazelnut.

Almond and hazelnut

Of the 10 samples with positive results, 1 chocolate sample contained both undeclared almond and hazelnut. Study suggested that the presence of undeclared tree nuts (almond, hazelnut, etc.) in candy and chocolate products could be caused by manufacturing equipment cross-contact between each runs⁶.

Milk

Undeclared BLG was detected in 7 candy products. BLG is a major component of whey protein in milk. Whey protein is often used as an emulsifier in confectionary production^{7,8}. Low levels of

BLG found in this survey could also be introduced into the product due to cross contamination on the production line⁶.

Gluten

A high level of undeclared gluten (910ppm) was found in 1 imported jelly candy product with a sticker containing translated list of ingredients and a nutrition fact table on the back. Gluten has been used as a replacement of gelatin in the chew candy⁹, so it may have been omitted from the list of ingredients during the translation⁶.

Peanut

Undeclared peanut was detected in 1 chocolate product. The low levels of undeclared peanut may have been due to incomplete cleaning of the production line leading to cross-contamination during the manufacturing process⁶.

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. The health risk assessment is based on exposure to the type of allergen or gluten through consumption, distribution, and number of units available on the market. 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. Follow-up actions include additional sample testing, facility inspection and product recall.

All positive results were forwarded to the OFSR for follow-up. 1 candy product containing undeclared gluten and 1 chocolate product containing undeclared hazelnut and almond were deemed to represent a health risk and were recalled^{10,11}. No published literature could be found on the similar topic for results comparison.

This survey generated new information on the background level of undeclared allergens and gluten in Valentine's Day-themed candy and chocolate products 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 the 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

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