



Undeclared Allergens in Multi-Ingredient Meat Products - 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 to 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 additional information regarding the presence and levels of undeclared allergens in multi-ingredient meat products. 359 samples were tested, and 13 samples were found to contain at least 1 undeclared allergen including egg, gluten, soy, and the milk proteins beta-lactoglobulin (BLG) and casein. The most frequent positive results of the presence of undeclared allergens were in sausage and hot dog products.

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. The extent of the follow-up actions taken by CFIA is based on the level of the contamination and the resulting health concern as determined by a health risk assessment. 4 products in this survey 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 CFIA 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 second survey conducted by the CFIA for undeclared allergens in multi-ingredient meat products. The first survey was conducted in 2014/15 fiscal year. The main objective of this survey was to get additional baseline information regarding the presence and levels of undeclared allergens including milk proteins (BLG and casein), almond, hazelnut, peanut, egg, sesame, soy, and gluten in multi-ingredient meat products.

All products were tested “as sold,” meaning that they were not prepared as per manufacturer’s instructions or as they would typically be consumed.

What did we sample

All products were sampled between May 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 **all** of the following allergens in the list of ingredients – almond, hazelnut, milk/dairy, peanut, soy, egg, sesame, and wheat, barley, oats, rye, triticale or gluten
- products with no list of ingredients
- products with a precautionary statement for all priority allergens
- products with grain-based coatings
- non-prepackaged products
- products that are past the “use by” or “best before” date

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

Product type	Domestic	Imported	Unspecified origin*	Total
Meat – ball	64	49	6	119
Meal – patty	108	5	7	120
Meat – sausage/hot dog	94	19	7	120
Total	266	73	20	359

* 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 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 96% of the samples tested did not contain any detectable levels of undeclared allergens. The results for the 13 samples tested positive are shown in table 2. These positive results primarily resulted from detection of low levels of egg. The majority of undeclared allergens found were in sausage/hot dog products.

Table 2: levels of allergens found in multi-ingredient meat products in ppm

Sample type	BLG	Casein	Egg	Gluten	Soy
Swedish style pork & beef meatballs				1600	
Fishball with meat			46.1		
Golden fish ball			13.8		
Fish and cuttlefish ball					0.56
Chicken burgers			4.3		
Grass fed beef burgers			3.1		
Minced pork					0.82
Chinese brand mini bite size sausage	2	96			
Greek sausage feta & spinach	34	32			
Farmer sausage				15	
Cured chicken sausage in pork casing			0.95		
Chicken hotdogs			0.76		
Chinese style sausage			0.51		

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 359 samples tested, over 96% did not contain any detectable levels of undeclared allergens. Of the 13 allergen positive multi-ingredient meat products, undeclared allergens and gluten were most frequently present in sausage/hot dog products.

All positive results were forwarded to the CFIA's OFSR for follow-up. The extent of the follow-up actions taken by CFIA is based on the level of contamination and the resulting health concern as determined by a health risk assessment. Appropriate follow-up actions can 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.

Egg

Egg was the most frequently detected undeclared allergen present in foods in this survey. Of all the samples in this survey, 7 tested positive for varying levels of undeclared egg. A previous investigation completed by the CFIA following a 2015/16 which examined undeclared allergens and gluten in processed fish and seafood products found the egg protein albumin in surimi as a binder. This could potentially be the source of the egg detected in this survey. 2 products containing egg were determined to present a health risk to consumers and were recalled^{6,7}.

Gluten

Undeclared gluten was found in 2 products sampled. Grains containing gluten are widely used in the production of many pre-packaged foods⁸. While no specific background level is mentioned in the *Food and Drug Regulations*, the best currently available scientific evidence indicates that levels of gluten below 20 ppm in gluten-free foods would be protective of the health of the vast majority of people with celiac disease⁵. 1 of these products was assessed as being a potential risk to consumers and was recalled⁹. The other product was deemed to be of no risk.

Milk

The milk protein BLG was detected in 2 of the products sampled for this survey. BLG is a major component of whey protein, from cow's milk. Whey protein can be used as either a stand-alone protein, partial replacement of meat proteins, or as partial or total replacement of soy protein products, or other non-meat binders such as modified starches¹⁰. The levels determined for BLG in this survey were low and below what is expected to be of any functional value as an additive. This possibly indicates it was present as a result of cross contamination in an ingredient or the final product. Casein was found in the same 2 products as BLG. 1 of these products was determined to present a potential health risk to consumers and was recalled¹¹. The other level was low and deemed not to represent a risk.

Soy

2 products tested were found to contain low levels of soy. This could have been the result of cross contamination or cross contact in the manufacturing process, or the presence of soy in 1 of the ingredients. None of the products containing undeclared soy were assessed as presenting a risk to consumers.

This survey generated new and additional information on the background level of undeclared allergens in multi-ingredient meat 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 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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