



Canadian Food
Inspection Agency

Agence canadienne
d'inspection des aliments

Undeclared Allergens and Gluten in ground Spices/Herbs – May 1, 2020 to March 31, 2021

Food allergen - Targeted surveys



Executive 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 additional information regarding the presence and levels of undeclared allergens and gluten in ground spices/herbs products. Of the 160 samples tested, 39 samples were found to contain undeclared gluten or allergens such as almond, peanut, sesame and soy.

Of the positive samples, 34 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 Agency is based on the level of the contamination and the resulting health concern as determined by a health risk assessment. None of the products sampled in this survey were found to represent a health risk so no product recalls were performed.

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.

The main objective of this survey was to obtain additional information regarding the presence and levels of undeclared allergens and gluten in ground spices/ herbs 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 May 2020 and March 2021. Samples were collected from local and regional grocery stores located in 6 major cities across Canada. These cities represented 4 geographical areas:

- Atlantic (Halifax)
- Quebec (Montreal)
- Ontario (Toronto, Ottawa)
- West (Vancouver and 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, 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/bulk bin products
- Products with no list of ingredients
- Products past the best before date
- Freeze-dried, whole, or rubbed spices
- Fresh spices

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

Sample type	Domestic	Import	Unspecified ^a origin	Total
Mixed spice/herb	5	23	16	44
Single spice/herb	3	69	44	116
Total	8	92	60	160

^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 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 claim⁶.

What were the survey results

Almost 76% of all ground spices/herbs products in this survey did not contain any detectable levels of allergens and gluten. The results for 39 positive samples are shown in Table 2.

Table 2: Levels of undeclared allergens and gluten in ground spices/herbs products in parts-per-million (ppm)

Sample type	Sample description	Almond	Gluten	Peanut	Sesame	Soy
Single spice/herb	Turmeric powder					0.69
Single spice/herb	Organic ground turmeric					0.44
Single spice/herb	Haldi powder turmeric powder			1.27		13.86
Single spice/herb	Cumin powder-1					0.68
Single spice/herb	Cumin powder-2			1.53		
Single spice/herb	Ground cumin			1.25	0.94	
Single spice/herb	Organic ground cumin seed		64			
Single spice/herb	Cold ground organic cumin powder		5.6		1.32	
Single spice/herb	Organic ground cumin seed		31			
Single spice/herb	Organic ground cumin seed		12			
Single spice/herb	Ground ginger-1			7.02		
Single spice/herb	Ground ginger-2			4.94		
Mixed spice/herb	Curry powder-1		15		4.84	6.93
Mixed spice/herb	Curry					1.76
Mixed spice/herb	Curry powder-2		7.3			
Mixed spice/herb	Organic ground curry masala					0.71
Mixed spice/herb	Curry powder, India inspired taste				0.72	
Mixed spice/herb	Mild medium curry powder					3.91
Mixed spice/herb	Garam masala	4.00				
Mixed spice/herb	Garam masala organic		9.4			
Mixed spice/herb	Tandoori masala barbecue spices					1.39
Mixed spice/herb	Amchar masala mix spices		9.6		1.01	1.76
Mixed spice/herb	Garam masala		14			
Single spice/herb	Mustard powder				0.83	
Single spice/herb	Ground mustard seeds		33			
Single spice/herb	Cayenne pepper powder-1					0.63
Single spice/herb	Cayenne pepper powder-2			1.12		
Single spice/herb	Ground red cayenne pepper			1.35		0.49
Single spice/herb	Organic cayenne pepper			1.01	0.41	
Single spice/herb	Hot powdered paprika			1.85		
Single spice/herb	Spicy paprika crushed			1.17		
Single spice/herb	Hot Hungarian style paprika					0.92

Single spice/herb	Paprika					2.27
Single spice/herb	Organic paprika	1.97				
Mixed spice/herb	Chili powder					6.3
Single spice/herb	Kashmiri red chilli powder			1.20		
Single spice/herb	100% natural crushed sumac		6.2			
Single spice/herb	Ground garlic					4.16
Single spice/herb	Garlic granulated			1.87		

What do the survey results mean

Of the 160 samples tested in this survey, almost 76% did not contain any detectable levels of allergens or gluten, while 39 samples were found to contain varying levels of undeclared gluten, almond, peanut, sesame and soy. 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. Therefore, 34 positive samples were forwarded to the CFIA’s OFSR for follow-up. None of the products sampled in this survey were found to represent a health risk so no product recalls were performed.

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.

Gluten

6 single spice/herb and 5 mixed spice/herb products were found to contain varying levels of undeclared gluten (5.6 to 64 ppm). Lower detected levels of undeclared gluten have been known to be present due to cross-contamination as a result of manufacturing practices⁶. These products were assessed as being of no risk to consumers so no product recalls were needed.

Almond

Undeclared almond was found in 1 single spice/herb and 1 mixed spice/herb products. Low levels of almond found in this survey could be introduced into the product due to cross contamination on the production line⁷. None of these products were deemed to pose a risk to consumers so no product recalls were needed.

Sesame

4 single spice/herb and 3 mixed spice/herb products were tested positive for undeclared sesame. Cross-contamination from processing and handling on the shared production line may be the reason of the low level of sesame in the tested products⁸. All these products were assessed as being of no risk to consumers so no product recalls were needed.

Peanut

Undeclared peanut was detected in 12 single spice/herb products. The low levels of undeclared peanut may have been due to incomplete cleaning of the production line leading to cross-contamination during the manufacturing process⁷. All products were deemed not to present a risk to consumers so no product recalls were needed.

Soy

Undeclared soy was found in 9 single spice/herb and 7 mixed spice/herb products. The level detected was likely due to cross contamination or cross contact in the manufacturing process⁸. This could result in the presence of a small amount of allergen in the final product. The level found was low and deemed not to pose a risk to consumers so no product recalls were needed.

Summary

All positive allergen findings in this survey were determined not to pose a risk to consumers.

The current survey results (24% positive rate) are similar to those found in another similar survey conducted in 2017 by CFIA (22% positive rate). In that survey, 359 ground herb and spice products were tested and 82 of the samples were found to contain at least 1 undeclared allergen, including milk proteins BLG and casein, egg, almond, hazelnut, peanut, sesame, soy, and gluten.

The results are lower than those found in a similar survey which was conducted in 2015 by CFIA to obtain baseline information regarding the presence and levels of undeclared allergens and gluten in herb and spice products (34% positive rate). In that survey, 598 products were tested and 203 of the samples were found to contain at least 1 undeclared allergen, including the milk protein beta-lactoglobulin (BLG), egg, hazelnut, peanut, sesame, soy, and gluten.

This survey generated additional information on the background level of undeclared allergens and gluten in ground spices/herbs 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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